CHAPTER

11

The X Window System

case Traditionally, the programmers and staff at Dominion Consulting have used the UNIX Bash shell as their sole interface with the systems they operate. Management has now decided to use the X Window system, in addition to the Bash shell, on all in-house systems. Your supervisor asks you to instruct each staff member on how to:

- Configure a computer to launch the X Window system when you start the computer, and instruct each staff member on how to implement the configuration
- Interact with the X Window system
- Personalize the desktop environment, and set up a password-protected screen saver
- Add a program to the X Window menu, and add an icon that invokes a program to the X Window desktop
- Use the File Manager, Spreadsheet, Calendar, and gEdit applications

LESSON A

objectives

In this lesson you will:

- **Describe the X Window system and its client/server model**
- **Understand the role of the Window Manager**
- **Start the X Window system**
- **Navigate within the X Window system and use its components**

Starting and Navigating an X Window Session

What Is the X Window System?

The X Window system is a **graphical user interface** (GUI) that runs on Linux and many UNIX operating systems. Like Windows and the Macintosh operating systems, it provides an easy-to-use, graphical method of operating the computer. Programmers may also develop applications that run on the X Window system and support GUI components, such as windows, dialog boxes, buttons, and pull-down menus. Figure 11-1 shows a typical X Window screen.

The X Window system was originally developed at the Massachusetts Institute of Technology (MIT). It was created so different brands of hardware, running different variations of UNIX, would all look and feel the same to the user. It was also designed to run applications across a network consisting of different types of computers. The system developed at MIT, currently in its eleventh version, is appropriately called **X11**. **XFree86** is a version of X11 that was ported to the PC and runs on Linux.

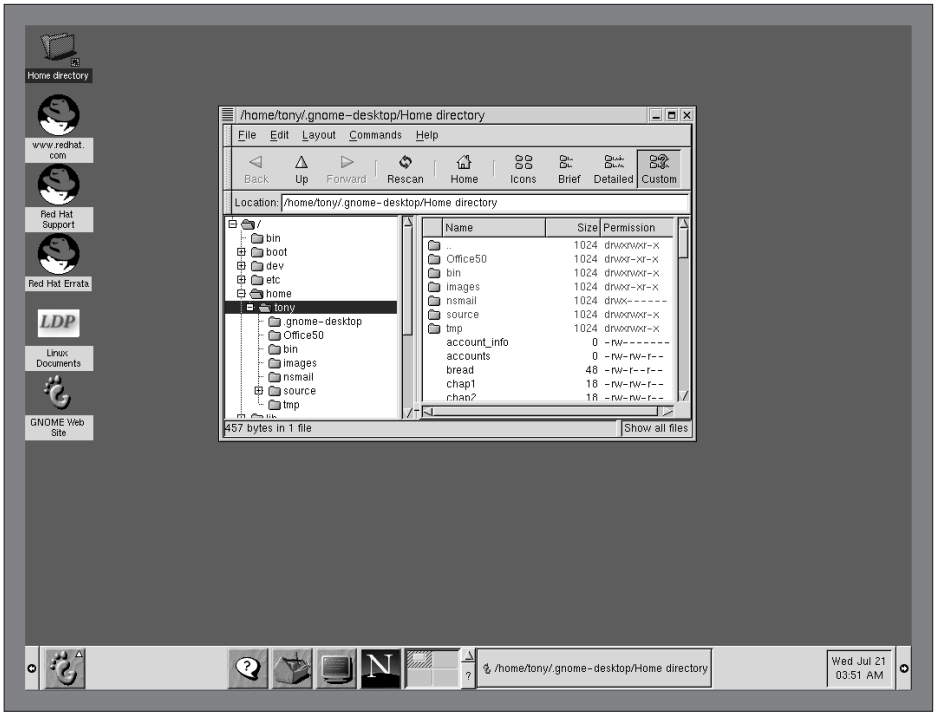

Figure 11-1: Typical X Window screen

X Window Clients and Servers

Although you can easily use the X Window system to run programs stored on your local computer, you can also run applications over a network. X Window uses a client/server model where a program can run on one computer but display its output on another. For example, suppose you have a network with two computers: system A and system B. The user on system A can invoke and run a program that resides on system B. Although the user of system A sees the program running in a window on his or her computer, it might actually be executing on system B. This interaction is transparent to the user of system A, who may not know the program is actually running on a different computer. Additionally, systems A and B can be different types of computers, each running a different variation of UNIX.

In X Window network terminology, the desktop system that the user runs a program from is called the **X server**. The system that hosts and executes the program is called the **X client**.

> **Note: In normal network terminology, the server is the system that hosts a program, and the client is the system run by the user. In X Window jargon, the terms client and server mean the opposite. The terms are reversed because the X Window server (on the desktop) performs operations requested by the client (on the host system). For example, the client might request that the server display a window or ask the server to move a window to a different position on the screen.**

Window Managers

Like the UNIX operating system itself, the X Window system is layered and built from components. At the top layer is the **Window Manager**. The Window Manager controls how windows appear and how users control them. In many regards, the Window Manager is to the X Window system as the shell is to UNIX: each provides the user an interface to the underlying components.

Many Window Managers have been developed, and most of them are available for free. Linux supports over 50 different ones. Table 11-1 lists some common Window Managers currently in use.

Window Manager	Description
AnotherLevel	Based on the fvwm Window Manager and commonly used with Red Hat Linux
CDE	Common Desktop Environment
Enlightenment	Popular Window Manager sometimes called E. Also commonly used with Red Hat Linux.
fvwm	Virtual Window Manager
fvwm95	Version of fvwm with a Windows 95 look and feel
KDE	K Desktop environment
olwm	Open Look Window Manager
mwm	Motif Window Manager
twm	Tab Window Manager or Tom's Window Manager

Table 11-1: Common Window Managers

Using GNOME

The **GNU Network Object Model Environment (GNOME)**, a product of the GNU project, is not a Window Manager, but a desktop environment that must be used along with a Window Manager. By default, Red Hat 6 installs the Enlightenment Window Manager with GNOME (pronounced "guh-nome"). All examples in this chapter use Enlightenment and GNOME.

> **Note: The GNU project is an organization with the stated purpose of developing a free, UNIX-like, operating system named GNU. The Linux kernel is used in many GNU distributions. The project's Web site is www.gnu.org.**

Starting the X Window System

If your system does not start the X Window system automatically, you may invoke it by using the startx command.

To start the X Window System (if your system does not automatically start it):

- Type **startx** and press **Enter**.

  You see a display similar to Figure 11-2.

Figure 11-2: Introductory X Window/GNOME screen

Configuring Linux to Automatically Start the X Window System

If your system does not automatically start the X Window system, you may configure it to do so. This is accomplished by modifying a line in the file /etc/inittab.

To view the contents of /etc/inittab:

1. Type **more /etc/inittab** and press **Enter**. Your screen looks similar to Figure 11-3.

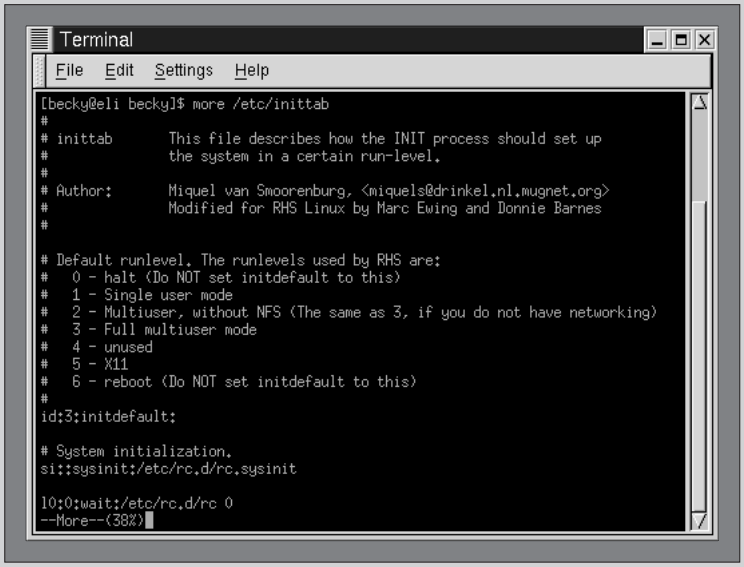

Figure 11-3: The /etc/inittab file

2 Look for the line that reads:

```
id:3:initdefault
```

3 Type **q** to exit the more command.

The code shown above establishes the operating system's default **run level**, or mode of operation, at 3. Run level 3 is full multi-user mode. By raising the run level to 5, the system starts in X11 mode, which automatically starts the X Window system.

Note: Configuring your system requires superuser privileges. You must be able to log on as root to complete the following exercise.

Caution: You should be very careful any time you log on as root. Because the root user has privileges to alter any part of the system configuration and delete any file, you could accidentally corrupt the operating system.

The next exercise is optional and assumes you have been given permission to log on as root. Because it requires you to shut down and reboot the system, you should perform it only if you are the sole user on a PC running Linux. You need to know the password for the root account.

To configure your system to start the X Window system automatically:

1 Log out of the system, and log back on as root.

2 Change your current working directory to /etc.

3. Make a back-up copy of the inittab file. Use a command such as **cp inittab inittab.safe**, and press **Enter**. You could restore the back-up copy if you accidentally corrupt the inittab file.
4. Open the inittab file in vi or Emacs.
5. Change the line:

   ```
   id:3:initdefault
   ```

   to

   ```
   id:5:initdefault
   ```

6. Save the file and exit the editor.
7. Reboot the system by typing **shutdown –r now** and pressing **Enter**. The –r option causes the system to reboot. The now argument tells the shutdown command to start shutting down immediately.
8. When the system starts again, you will be greeted by the X Window Login screen. Log on with your normal user name and password.

Now that you know how to start the X Window system, you are ready to learn to navigate it and control its common components.

Interacting with the X Window System

You interact with the X Window environment through its many components. Figure 11-4 shows the opening GNOME screen, with its major components labeled.

Here is a description of the components in Figure 11-4.

- Icons: There are a number of **icons**, or small images, on the screen. Each causes an action to take place when activated. You activate an icon by positioning the mouse pointer over it and clicking the left mouse button.
- GNOME Panel: This component is a strip that runs across the bottom of the screen, and includes a number of icons. Each icon invokes an **applet** when activated. An applet is a small application written specifically to be placed on the panel.
- Windows: Every program, application, or applet that runs under the X Window system runs in a window. Windows have many of their own components, which you will learn about in this chapter.
- Desktop Area: This is the background area that holds the windows and icons you are working with during your X Window session.

Now that you can identify the major components of the GNOME screen, you will learn to interact with each one.

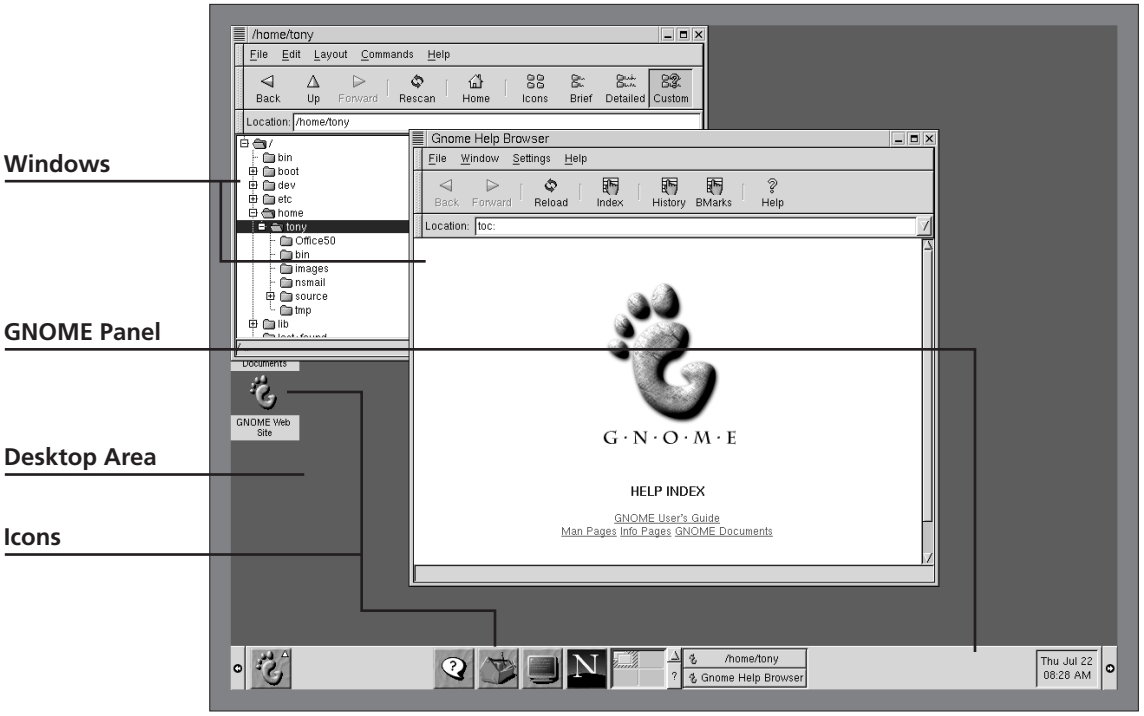

Figure 11-4: Major GNOME components

Interacting with Windows

Windows have their own components, as shown in Figure 11-5.

Here is a description of the window components.

- Border: Each window is outlined with a border.
- Title Bar: At the top of the window border is a title bar. The title bar lists the name of the window or the application running in the window.
- Window Options button: Click this button to see a menu offering several useful window operations.
- Iconify button: Click this button to collapse the window into a small icon. The icon appears in a section of the panel known as the Pager. The program in the window is still running but is hidden from sight.
- Minimize/Maximize button: Click this button to alternately expand the window to fill the screen and reduce the window to its original size.
- Close button: Click this button to close the window and terminate the application running in it.
- Scroll bar: If a window contains more information than it can display, you see a scroll bar. The scroll bar lets you scroll through all the window's content.

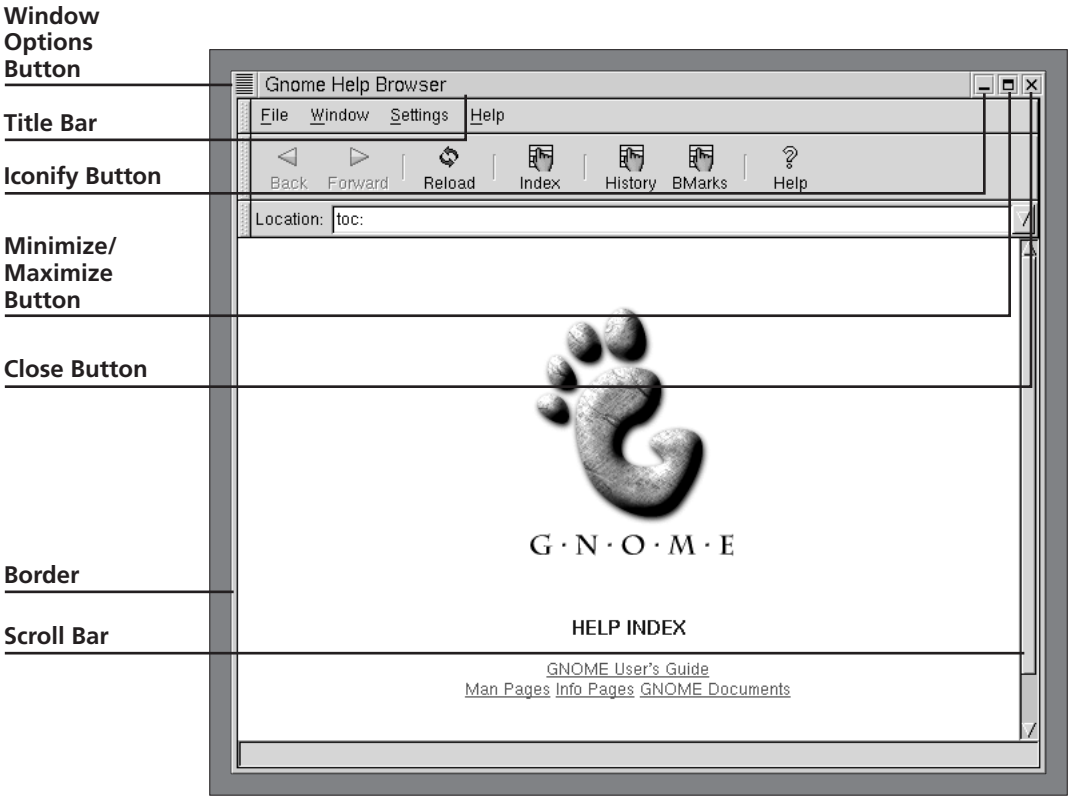

Figure 11-5: Window components

Many GNOME window components appear and function exactly like their counterparts in Windows 98. If you are already comfortable with Windows 98, you will be comfortable with most window operations in GNOME.

One of the basic window operations is resizing.

To practice resizing a window:

1. If you do not see a window titled "Gnome Help Browser" on your screen, invoke it by clicking the large question mark icon on the panel, shown in Figure 11-6. If you do see the Help Browser window, skip to Step 2.

Figure 11-6: Gnome Help Browser icon

2 Move the mouse pointer to the right edge of the window border. The pointer becomes a horizontal double-headed arrow. Click and hold the left mouse button while dragging the mouse pointer to the right. You see the window expand horizontally. Drag the mouse pointer back to the left, and the window shrinks horizontally. Release the mouse pointer to stop resizing the window.

3 Move the mouse pointer to the bottom edge of the screen. The pointer becomes a vertical double-headed arrow. Click and hold the left mouse button as you move the pointer, first up and then down. The window shrinks and expands vertically.

4 Move the mouse pointer to the lower-right corner of the window. The pointer becomes a slanted double-headed arrow. Click and hold the left mouse button while dragging the mouse pointer toward the lower-right corner of the screen. The window expands both horizontally and vertically. Drag the pointer back toward the upper-left corner of the screen, and the window shrinks horizontally and vertically.

5 Release the mouse pointer to stop resizing the window.

The Help Browser contains useful information on using GNOME. Its contents are hyperlinked in a manner similar to a Web page.

Other basic window operations are moving, shading, and unshading a window.

To practice moving, shading, and unshading a window:

1 Move the mouse pointer to the window's title bar. The pointer becomes a four-way arrow.

2 Click and hold the left mouse button as you drag the mouse pointer across the screen. The window moves to follow the mouse pointer.

3 Release the mouse button to stop moving the window.

4 Shading a window means to collapse it, or "draw it up" into its title bar. Double-click the title bar to shade the window.

5 Double-click the title bar again to unshade the window.

Most window components offer context-sensitive pop-up Help boxes. These are useful for discovering the purpose of a button or another component.

To practice using the pop-up Help boxes:

1. Position the mouse pointer on the window's title bar.
2. After a brief moment, a box describing how to use the title bar pops up.
3. Perform this action with other buttons on the window, and discover their use.

By now you have probably realized that pointing to an object on the screen and clicking the left button carries out most mouse operations. From this point forward, this action is called "clicking." Actions that require you to click the right mouse button are called "right-clicking."

The Iconify, Minimize/Maximize, and Close buttons are at the top right corner of the window. Use these to adjust the window's size and to terminate the window's application.

Refer to Figure 11-5 to review each button's location.

To practice using the Minimize, Maximize, and Close buttons:

1. Click the **Iconify** button. The window shrinks to an icon.
2. The Help Browser is still running, however. Look at the panel (located at the bottom of the screen). In a section known as the Pager, illustrated in Figure 11-7, you see a button for the Gnome Help Browser.

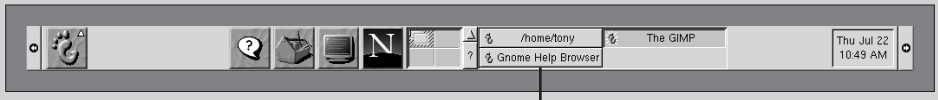

Figure 11-7: The Pager

3. Click the **Gnome Help Browser** button in the Pager. You see the window reappear.
4. Click the **Minimize/Maximize** button. The window expands to fill the entire screen.
5. Click the **Minimize/Maximize** button again. The window shrinks back to its previous size.
6. Click the **Close** button. The application terminates and its window disappears from the screen.

Finally, the Windows Options button displays a menu of basic and advanced window operations:

- Close terminates the application and closes the window.
- Annihilate also closes the window but can be used in cases where the application is malfunctioning, when it will not let you close the window.
- Iconify reduces the window to an icon in the GNOME Pager.
- Raise brings the window on top of all other windows.
- Lower puts the window beneath all other windows.
- Shade/Unshade collapses or expands a window.
- Stick/Unstick makes a window visible on all desktops. (Desktops are covered later in this chapter.)
- Desktop displays a menu that allows you to move the window to specific desktops.
- Window Size displays a menu that allows you to change the width and height of the window.

Note: You can customize the items in the Windows Options menu, which may be different on your system.

To practice using the Windows Options menu:

1. Click the **large question mark** icon on the panel to open the Help Browser window.
2. Click the **Windows Option** button in the upper-left corner of the window.
3. Experiment with several options on the menu.
4. When finished, close the **Help Browser** and any other open windows.

Interacting with the Panel

The panel, which appears at the bottom of the GNOME screen, features the Pager (which you used in the previous section), a clock, and several icons. The icon at the left end of the panel, shown in Figure 11-8, is the Main menu button.

Figure 11-8: Main menu button

Clicking the Main menu button reveals the Main menu, which offers icons of its own and several submenus.

To practice using the Main menu:

1. Click the **Main menu** button. You see the Main menu, illustrated in Figure 11-9.

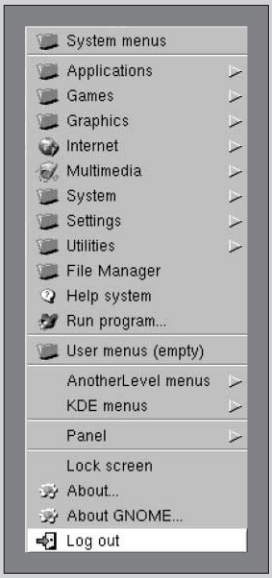

Figure 11-9: Main menu

2. Items followed by an arrow contain submenus. Position the mouse pointer over any of these to see the submenu appear.
3. Click the **File Manager** item. You see the File Manager window open.
4. Click the **Close** button on the File Manager window to close the application. (Note that depending on your computer's configuration, a File Manager window may open automatically when you start the X Window System.)

To the right of the Main menu button another set of icons typically appear, as shown in Figure 11-10.

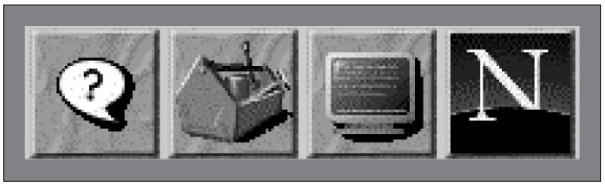

Figure 11-10: Panel icons

You have already used the large question mark icon, which opens the Help Browser. The toolbox icon opens the Control Center, a program for configuring the GNOME environment. The icon displaying an image of a computer screen executes a terminal emulation program, which allows you to use the command line within a window. The last icon in the figure displays the Netscape logo. It executes the Netscape Communicator Web browser and e-mail client.

To practice launching the terminal emulation program and Netscape Communicator:

1. Click the **Terminal Emulator** icon, which displays an image of a computer screen. A terminal window appears with a command prompt.
2. You cannot use the window until it is active. Click anywhere in the window to make it active. You see the title bar change color.
3. Practice shell commands such as ls-l, date, and who in the window. Leave the window open. (Note that depending on your computer's configuration, a terminal window may open automatically when you start the X Window System.)

The next area on the panel is the GNOME Pager, shown in Figure 11-11.

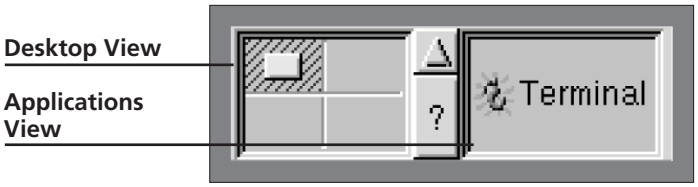

Figure 11-11: GNOME Pager

The GNOME Pager is an **applet**, a small application designed to run on the panel. As shown in Figure 11-11, the left section of the Pager is the Desktop View. The Desktop View is divided into four areas. These are virtual desktops that you may switch to at any time. Currently, you are using the first desktop area, which is represented by the upper-left quadrant of the Desktop View.

To practice using the Desktop View:

1. Make sure the Terminal Emulation program is running on your current desktop.
2. Your current desktop is represented by the upper-left square of the Desktop View. Click each of the other quadrants of the Desktop View. Notice that each appears as a clear desktop, with no windows open.
3. Click the lower-right quadrant of the Desktop View.

4. Click the **large question mark** icon on the panel to open the Help Browser. Notice a small square in the lower-right quadrant of the Desktop view, approximating the position of the Help Browser window.
5. Click the upper-left quadrant of the Desktop view to return to your original desktop. You see the Terminal Emulation window.

The second area of the Pager is the Applications View. It holds an icon for each application that is running in the current desktop area. As you have already learned, an application that is represented by an icon may be restored to the desktop by clicking its icon in the Applications View. Between the Desktop View and Application View areas are two small icons: one with an up arrow and one with a small question mark. The up-arrow icon displays a list of all running applications. The small question-mark icon opens the GNOME Pager Settings window, which allows you to customize the Pager.

Near the right edge of the panel is the Clock applet shown in Figure 11-12.

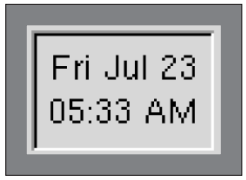

Figure 11-12: Clock applet

By default, the clock displays the date and time. You can modify its properties, however, by right-clicking it.

To modify the Clock applet properties:

1. Position the mouse pointer over the Clock applet's display, and click the right mouse button. You see a small shortcut menu.
2. Click **Properties**. You see the Clock Properties window, shown in Figure 11-13.
3. The Time Format buttons allow you to choose from a 12- or 24-hour display. The Show date check box toggles the date display on or off. The Unix time check box toggles the time display between hours and minutes, and the internal UNIX time format. Click the **24 hour** button, and the **Show date** button.
4. Click **OK**. The date no longer appears, and the time appears in 24-hour format.

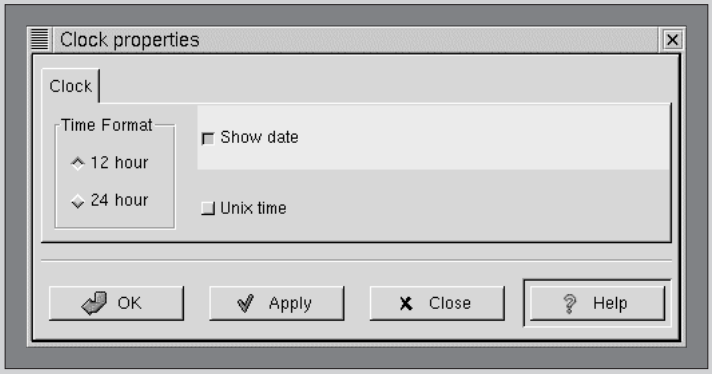

Figure 11-13: Clock Properties window

5. Repeat the procedure in Steps 1 and 2 to open the Clock Properties window again.
6. Reset the Clock applet to display the time in a 12-hour format and show the date.

If an application's window is very large or if you are using a low resolution display, you may want to remove the panel from the screen. The Hide button, shown in Figure 11-14, is at the left edge of the panel. (Note that depending on you computer's configuration, the arrow may not appear on the Hide button.)

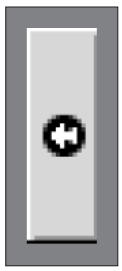

Figure 11-14: Hide button

A similar button, with an arrow pointing to the right, is at the right edge of the panel. When you click either of these buttons, you hide the panel.

To practice hiding the panel:

1. Click the **Hide** button at the left edge of the panel (next to the Main menu button). You see the panel slide out of view.
2. The right Hide button is still visible. Click it to bring the panel back into view.

Now that you have learned the basic techniques of interacting with the X Window system, and the GNOME environment in particular, you are ready for more advanced operations. In the next lesson you will learn to run built-in X Window applications and configure your desktop.

SUMMARY

- The X Window system is a graphical user interface, or GUI, that runs on many UNIX and Linux systems. It allows users to run applications transparently across a network.
- The X Window system is built in layers. The top layer, with which the user interacts, is called the Window Manager. By default, Red Hat 6 uses the Enlightenment Window Manager with the GNOME environment.
- Use the startx command at the command line to start the X Window system. A line in the /etc/inittab file directs Linux to start the X Window system automatically.
- The GNOME environment consists of icons, a panel, windows, and the desktop area.
- You resize, move, minimize, maximize, and close a window by interacting with its border, title bar, and buttons.
- The GNOME Panel provides access to the Main menu and icons for applets. One applet is the Pager, which shows the virtual desktops and buttons for all the running applications. The panel provides a button that hides and shows it.
- You can configure the Clock applet to display the date and the time in 12-hour, 24-hour, or the internal UNIX format.

REVIEW QUESTIONS

1. In the X Window client/server model, the system that hosts and executes the application is the _____.
   a. client
   b. server
   c. workstation
   d. host
2. The top layer of the X Window system is the _____.
   a. X Window kernel
   b. network manager
   c. Window Manager
   d. window shell

3. The command that starts the X Window system is _____.
   a. start
   b. startx
   c. runx
   d. start x
4. The _____ file directs UNIX to automatically start the X Window system.
   a. /usr/xwindow
   b. /etc/xwindow
   c. /etc/inittab
   d. /root/inittab
5. Clicking the Iconify button on a window causes the window to _____.
   a. collapse into a small icon in the Pager
   b. close
   c. shrink to a smaller size
   d. expand to fill the screen
6. The Minimize/Maximize button on a window causes the window to _____.
   a. collapse into a small icon in the Pager
   b. close
   c. shrink to a smaller size
   d. alternately expand to fill the screen and shrink to its original size
7. A(n) _____ is a small application written to be placed on the panel.
   a. smallapp
   b. applet
   c. GNOME program
   d. script
8. The Pager's desktop view shows _____.
   a. the desktops of other systems on the network
   b. different background colors that may be placed on the desktop
   c. the virtual desktop in four quadrants
   d. the name of the application running on the desktop
9. The Pager's application view shows _____.
   a. a history of recently run applications
   b. button icons for all applications currently running
   c. a list of all available applications on the system disk
   d. how to execute an application
10. A button that hides the panel from view is located at _____.
    a. the left end of the panel
    b. the right end of the panel
    c. the center of the panel
    d. both a and b

EXERCISES

1. Start the X Window system on your computer. Open the GNOME Help Browser, and perform these window operations:
   a. Shade and unshade the window
   b. Maximize the window
   c. Minimize the window
   d. Iconify the window
   e. Restore the window from the Pager
   f. Close the window
2. Open the GNOME Help Browser while the upper-left quadrant of the Pager's virtual desktop view is active. Describe how the icon for the current desktop changes.
3. Activate the upper-right quadrant of the Pager's desktop view, and open a terminal window. Practice a shell command, such as ls.
4. Activate the lower-left quadrant of the Pager's desktop view, and open another terminal. Use the who command to see a list of current users. Note how many times you are listed.
5. Change the Clock applet so the time appears in 24-hour format and the date does not appear.
6. What is the difference between closing a window and using the Annihilate command on the Window Options menu?

DISCOVERY EXERCISES

1. Open a terminal window in the current desktop. Next, open a Gnome Help Browser window in the same desktop. How does the icon for the current desktop indicate that two windows are open?
2. With the terminal window and the Gnome Help Browser still open, note the button icons in the Pager's application view. Change your current desktop by selecting the lower-right quadrant of the Pager's desktop view. Describe the contents of the application view now.
3. With the Help Browser open, use the mouse to resize the window as small as possible. Next, use the Minimize/Maximize button to expand the window to full screen. Click the Minimize/Maximize button again. To what size did the window shrink?
4. Display the contents of the /etc/inittab file. What comments describe the available run levels?
5. The Help Browser offers an interface similar to a Web browser. Open it and practice looking up some topics you have studied in this section.

LESSON B

objectives

In this lesson you will:

- **Use the File Manager to navigate the file system and to copy, move, and delete files**
- **Execute the built-in calendar, spreadsheet, and editing applications**
- **Copy and paste between windows**
- **Perform basic desktop configuration**

Running Applications and Customizing the Desktop

Running Built-in Applications

The staff at Dominion Consulting frequently needs programs for calendar, text editing, and spreadsheet operations. They could also benefit from a graphical file management utility. Your next task is to find built-in applications for all these needs. After reading this section and completing its exercises, you will be able to:

- Use the File Manager application to navigate the file system, and to copy, move, and delete files
- Use the Calendar application to keep appointments and a to-do list
- Start the Spreadsheet application and the gEdit application
- Copy text from one window and paste it in another
- Change your desktop background and your screen saver
- Move icons on the panel and add other applets to the panel
- Add new icons that launch your own programs on the panel
- Add your own programs to the Main menu

Management has asked you to instruct the other staff members on how to locate and execute programs that will help them do their job more productively. They also ask you to investigate using a graphical file management tool. You decide to consult the Gnome Help Browser and find references to a program called File Manager. You've also read about a calendar program. Both programs are executed from the Main menu.

To run the File Manager program:

1. Click the **Main menu** button. The Main menu appears.
2. Click the **File Manager** entry. The File Manager application appears, as shown in Figure 11-15.

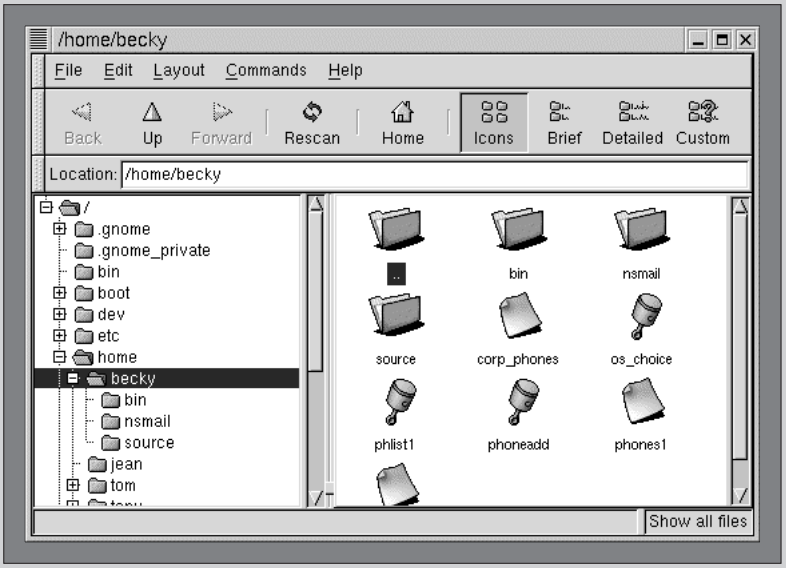

Figure 11-15: File Manager

3. The left area of the window is a tree view of the file system, as shown in Figure 11-16.

   The directories appear with folder icons. Notice that some directories have plus signs (+) next to their entry and others have minus signs (-). The plus and minus signs indicate that the directory has subdirectories.
4. Click the **plus sign** that appears before the etc directory. (If you do not see the plus sign, click the etc directory's folder.) The tree display expands to show all subdirectories that are immediately below the etc directory. Also, the plus sign has become a minus sign, indicating the directory view is expanded.
5. Click the **minus sign** that now appears before the etc directory. The view of the etc subdirectories collapses, and the minus sign once again becomes a plus sign.

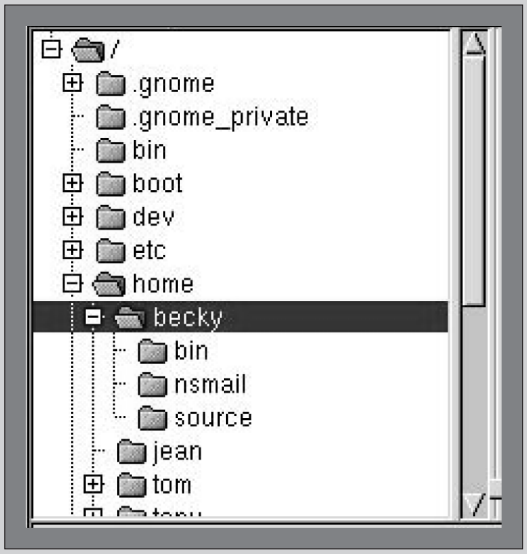

Figure 11-16: Directory tree

6 The current working directory appears highlighted in the directory tree diagram. The right area of the window, which is similar to Figure 11-17, shows the files and subdirectories in the current working directory.

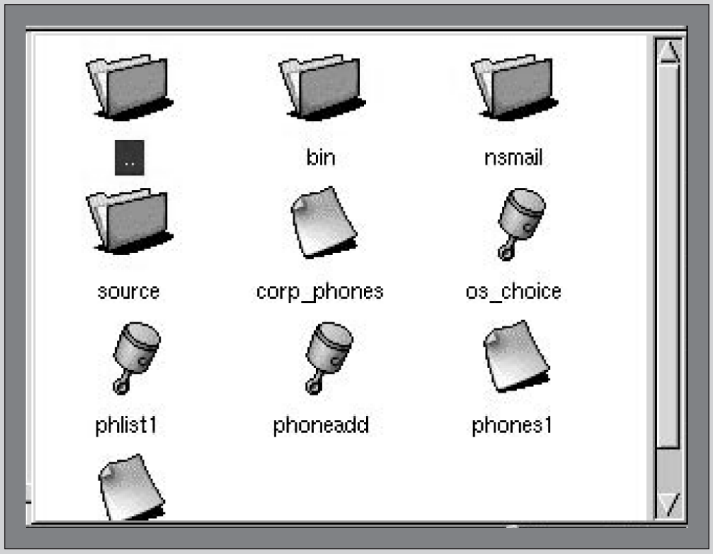

Figure 11-17: File view

7. Click the entry for the **dev** directory. (Click the name dev, or click the folder icon next to the name.) /dev is now your current working directory. You see the files and subdirectories in dev in the right window. Experiment by clicking several directories shown in the tree diagram. Notice that the File Manager will not allow you to enter a directory you do not have permission to enter.

   The button bar, just below the menu bar, appears similar to Figure 11-18.

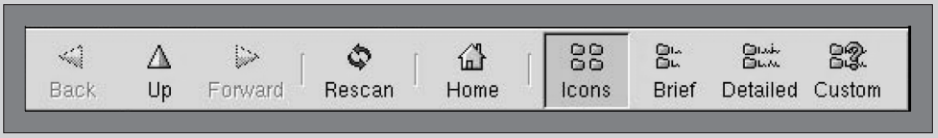

Figure 11-18: File Manager button bar

8. Click the **Home** button. The File Manager returns you to your home directory.
9. By default, file listings appear in Icon view (as shown in Figure 11-17). You may also display them in Brief view, Detailed view, and Custom view. Click the **Brief** button on the button bar. Your file display becomes a brief list, similar to that shown in Figure 11-19.

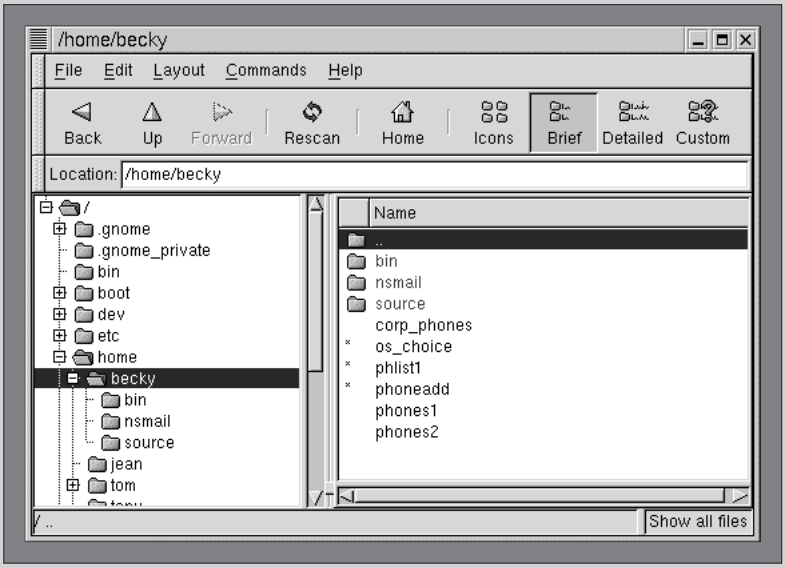

Figure 11-19: Brief view

10. Click the **Detailed** button. Your file display becomes a detailed listing, similar to that shown in Figure 11-20.

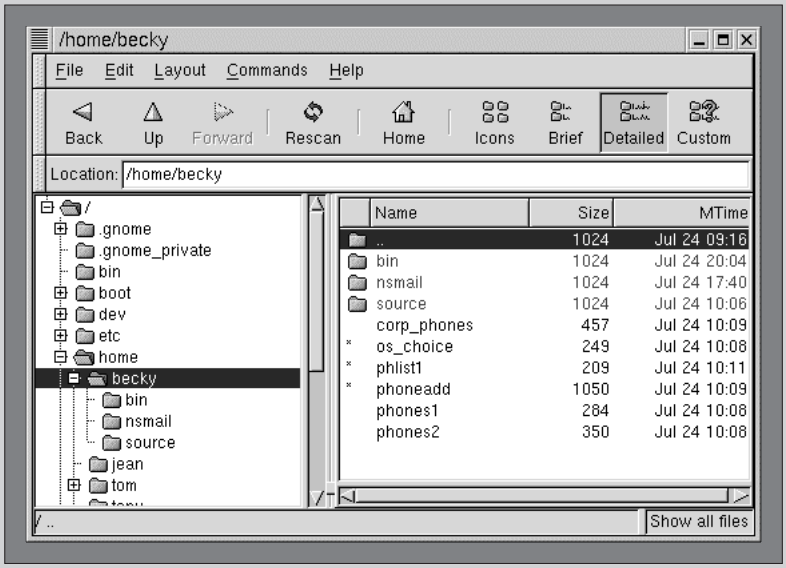

Figure 11-20: Detailed view

11 Click the **Custom** button. You see a file display similar to that shown in Figure 11-21.

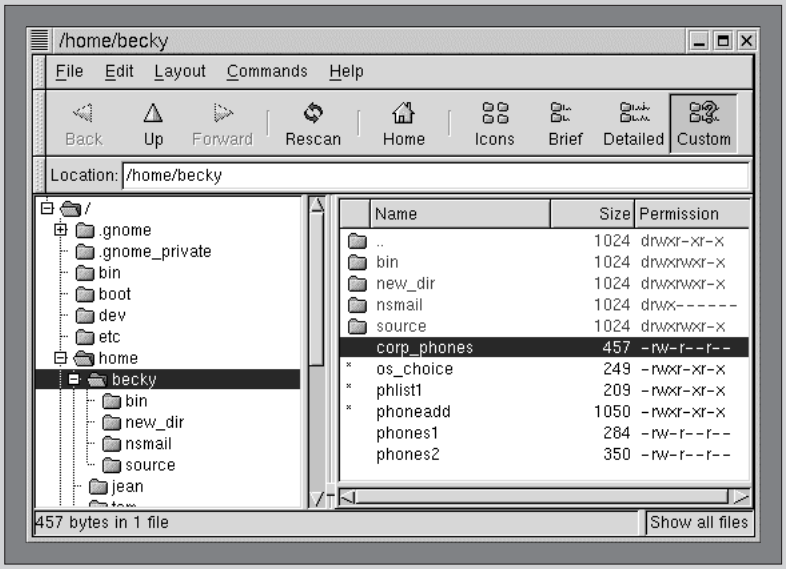

Figure 11-21: Custom file display

12 The Custom display is called "custom," because it displays the file attributes you can modify. Click the word **Edit** on the menu bar. The Edit menu appears.

13 Click **Preferences** on the Edit menu bar. The Preferences window, similar to Figure 11-22, appears.

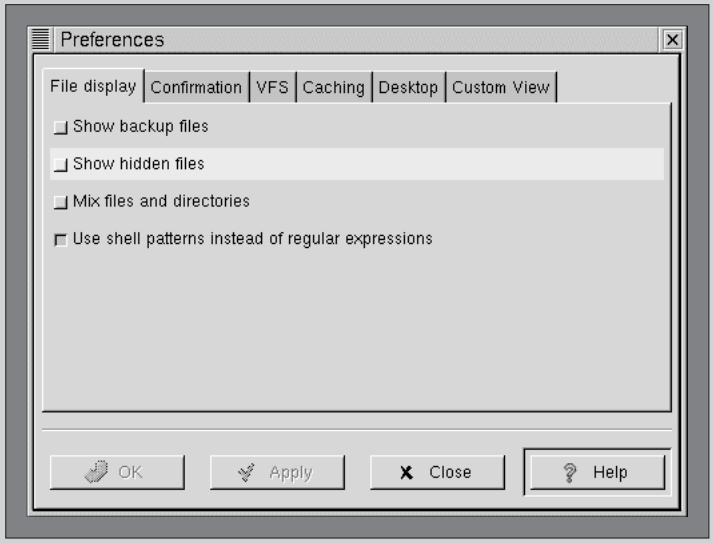

Figure 11-22: Preferences window

14 Click the **Custom View** tab. You see the Custom View section, similar to that shown in Figure 11-23.

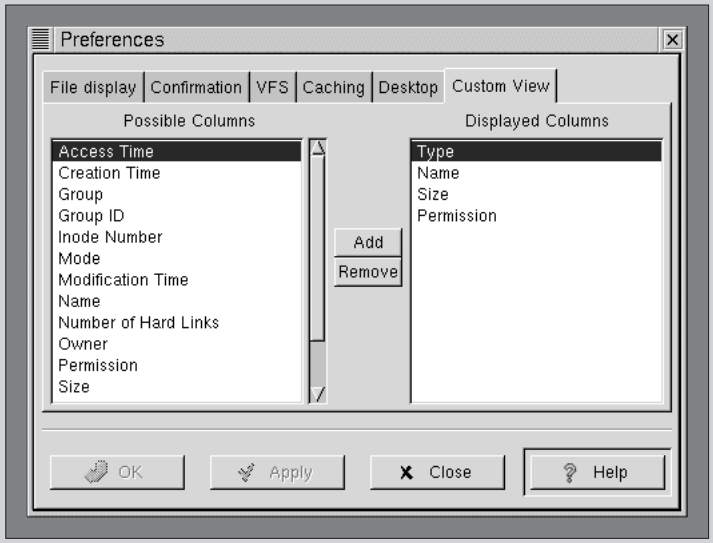

Figure 11-23: Custom view section of Preferences window

15 The items listed under Possible Columns may be included in the custom display. The items under Displayed Columns are those currently included. In the Possible Columns section, click **Owner**.

16 Next, click the **Add** button. Owner is now added to the Displayed Columns section.

17 Click the OK button. The Custom View is updated to include the owner of each file and directory. The display is similar to Figure 11-24.

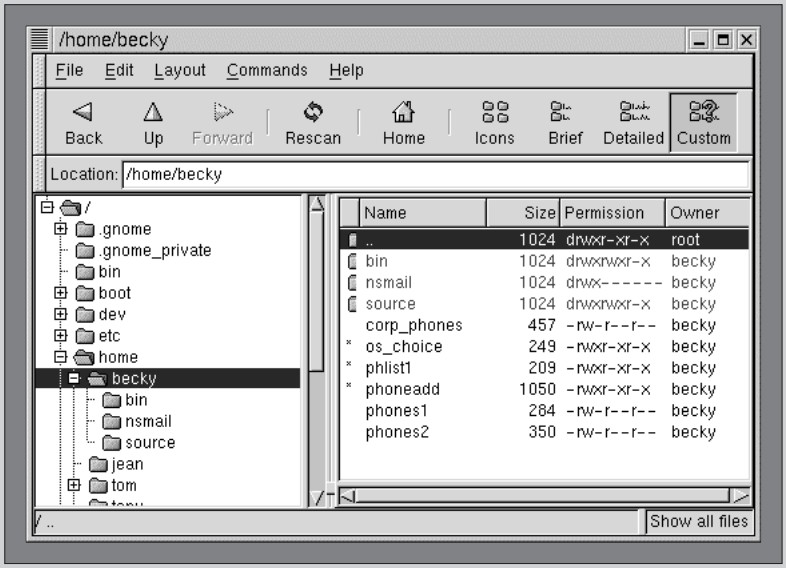

Figure 11-24: Updated Custom view

The File Manager also provides convenient methods for copying, renaming, and deleting files. These procedures must be part of your instruction to the other staff at Dominion Consulting.

To copy, rename, and delete files:

1 Make sure the File Manager is still running. Before experimenting with file operations, create a set of empty files. Click the **Terminal Emulation** icon on the panel, as shown in Figure 11-25.

Figure 11-25: Terminal Emulation icon

2. A terminal window appears with a command prompt. Click in the window to activate it.
3. Create the files test1, test2, and test3 with the touch command. Your screen appears similar to Figure 11-26.

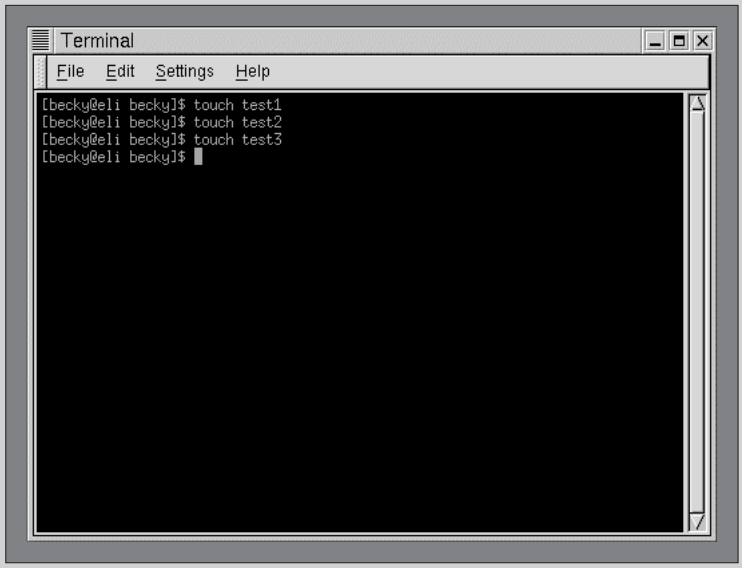

Figure 11-26: Terminal window

4. Close the **Terminal** window.
5. The File Manager display should be updated because new files were created. Click the **Rescan** button. Listings for the test1, test2, and test3 files appear in the File view.
6. Switch back to Icon view by clicking the **Icons** button.
7. Right-click the **test1** file icon.
8. On the shortcut menu, click **Copy**. The Copy window appears, as shown in Figure 11-27.

9. You will now copy the file to test4 in your home directory. In the text box, type the pathname **/home/*username*/test4** (where *username* is your user name). Click the **OK** button.
10. The test4 file appears in the File view. Again, right-click the **test1** icon.

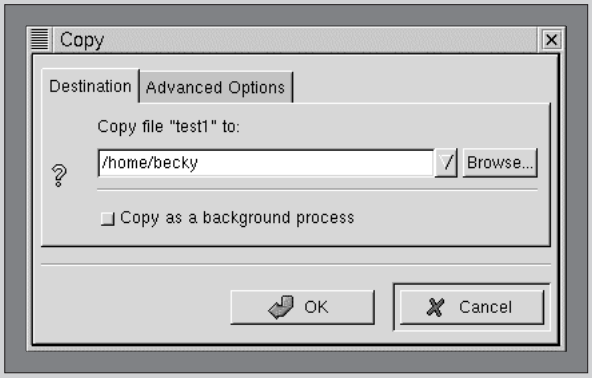

Figure 11-27: Copy window

11. On the shortcut menu, click **Delete**. The Delete Confirmation window appears, as shown in Figure 11-28.

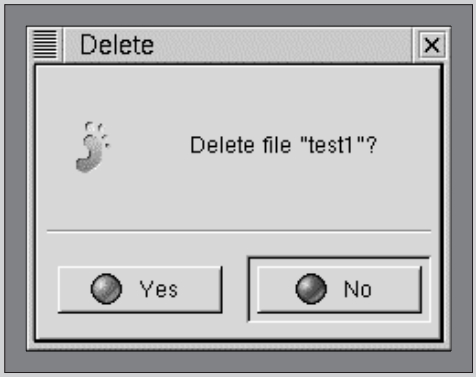

Figure 11-28: Delete Confirmation window

12. Click the **Yes** button to delete the file.
13. Right-click the **test2** file icon, and then click **Move** on the shortcut menu. The Move window, as shown in Figure 11-29, appears.
14. You will now rename (move) the file to Test5, in your home directory. In the text box, type the pathname **/home/*username*/test5** (where *username* is your user name). Click the **OK** button. The file is renamed test5.
15. The File Manager also lets you perform operations on multiple files at once. Switch to Brief view by clicking the **Brief** button.

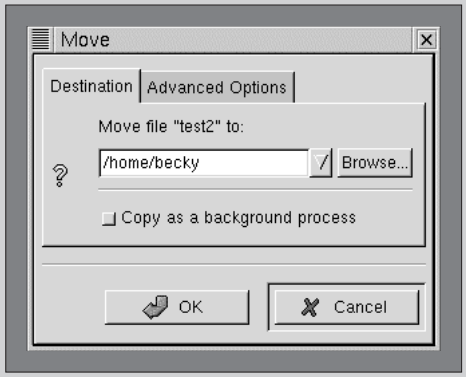

Figure 11-29: Move window

16. Click the **test3** file to select it.
17. Hold down the **Shift** key, and click the **test5** file. You see test3, test4, and test5 highlighted.
18. Right-click any of the selected files.
19. On the shortcut menu, click **Delete**.
20. The Delete Confirmation window appears. Click **Yes**.

    The three files are deleted.

When you select a file and then hold down the Shift key while selecting another file, you also select all the files whose names appear between the two selected files. You can hold down the Ctrl key while selecting files to add them to your selection one at a time.

The File Manager also allows you to create new directories.

To create a directory with the File Manager:

1. With File Manager running, click **File** on the menu bar. The File menu appears.
2. Point to **New** on the File menu. A submenu appears.
3. Click **Directory**. The Create a new Directory window appears, as shown in Figure 11-30.

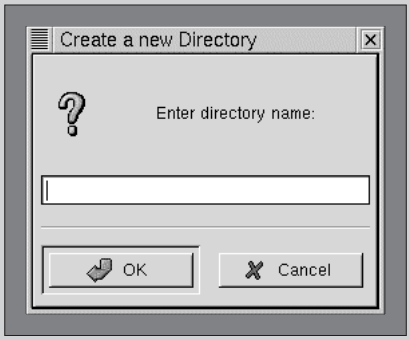

Figure 11-30: Create a New Directory window

4. You will now create the new_dir directory in your home directory. In the text box, type the pathname **/home/*username*/new_dir** (where *username* is your user name). Click **OK**.

   The File view is updated with the new_dir directory listing.
5. Close the File Manager application.

In this section you have learned the basic operations of the File Manager, which will prove very helpful to the staff at Dominion Consulting as they learn to use the X Window system. In the next section you explore the Calendar application.

Using the Calendar Application

The GNOME calendar application is easy to use and offers several helpful features. It allows you to set up appointments, create to-do lists, and view your calendar by the day, week, month, or year. This will be a useful program for the rest of the staff at Dominion Consulting.

To use the Calendar application:

1. Open the **Main menu** and point to **Applications**. A submenu appears.
2. Click **Calendar**. The Calendar window appears, as shown in Figure 11-31.

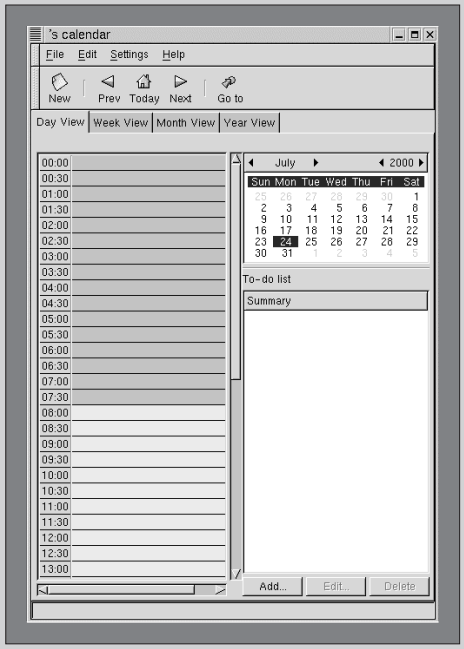

Figure 11-31: Calendar application

3 By default, the calendar appears in Day view. On the left, the day's hours appear in 30-minute increments. On the right, a calendar for the month appears, with today's date highlighted. Beneath the month's calendar is an empty to-do list. Click the **Week View** tab to see the display change to a weekly view, as shown in Figure 11-32.

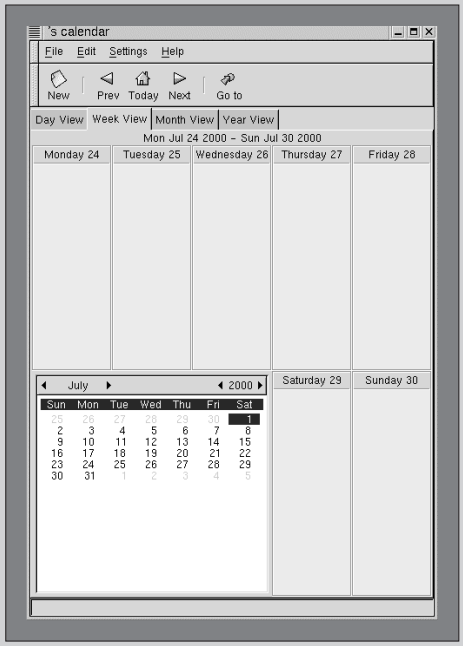

Figure 11-32: Week view

4 Next, click the **Month View** tab. The calendar looks like Figure 11-33.

Figure 11-33: Month view

5 Next, click the **Year View** tab. The calendar changes to a year view, as shown in Figure 11-34.

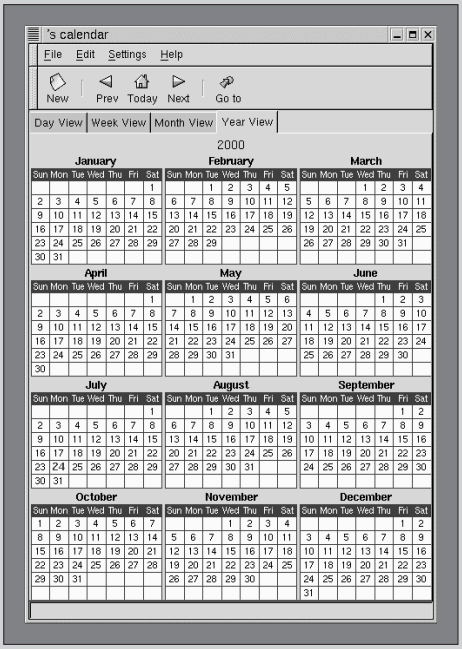

Figure 11-34: Year view

6 Click the **Day View** tab to return to the Day view.

7 Before entering appointments in the calendar, you notice the times appear in 24-hour format. You need to change them to regular 12-hour format. Click **Settings** on the menu bar. A menu appears.

8 Click **Preferences**. The Preferences window appears, as shown in Figure 11-35.

9 Notice that the 24-hour button is pushed down. Click the **12-hour (AM/PM)** button.

10 Click **OK**. The times now appear in 12-hour format.

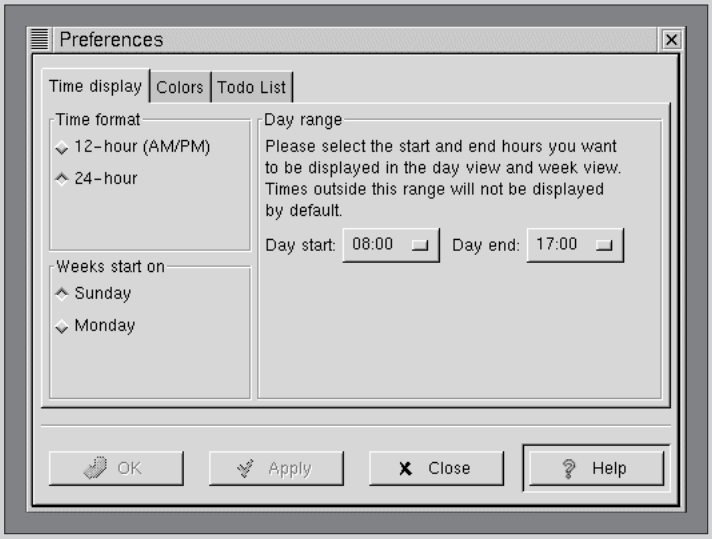

Figure 11-35: Calendar Preferences window

11 You need to enter an appointment you have with Carmen Scott later today. Click the **New** button on the button bar. The Create new appointment window appears, as shown in Figure 11-36.

12 In the Summary text box, type **Meeting with Carmen Scott to discuss projected staff development needs**.

13 You need to specify a starting time, which is 2:00 PM. Click the blank button next to the start time. A menu pops up. Position the mouse pointer over 2:00 PM, and then click **2:00 PM** on the submenu.

14 The meeting is scheduled to last until 3:30 PM. Click the blank button next to the end time. A menu pops up. Position the mouse pointer over 3:00 PM, and then click **3:30 PM** on the submenu.

15 Click the **OK** button. If a window appears informing you that the file has changed since it has loaded and asks if you want to continue, click the **Yes** button.

16 At 4:00 PM today, the sales team is scheduled to make a presentation. Click the **New** button on the button bar. The Create new appointment window appears. Type **Sales Team Presentation** in the Summary box.

17 Schedule the presentation to last from **4:00 PM** until **5:00 PM**. Click **OK**.

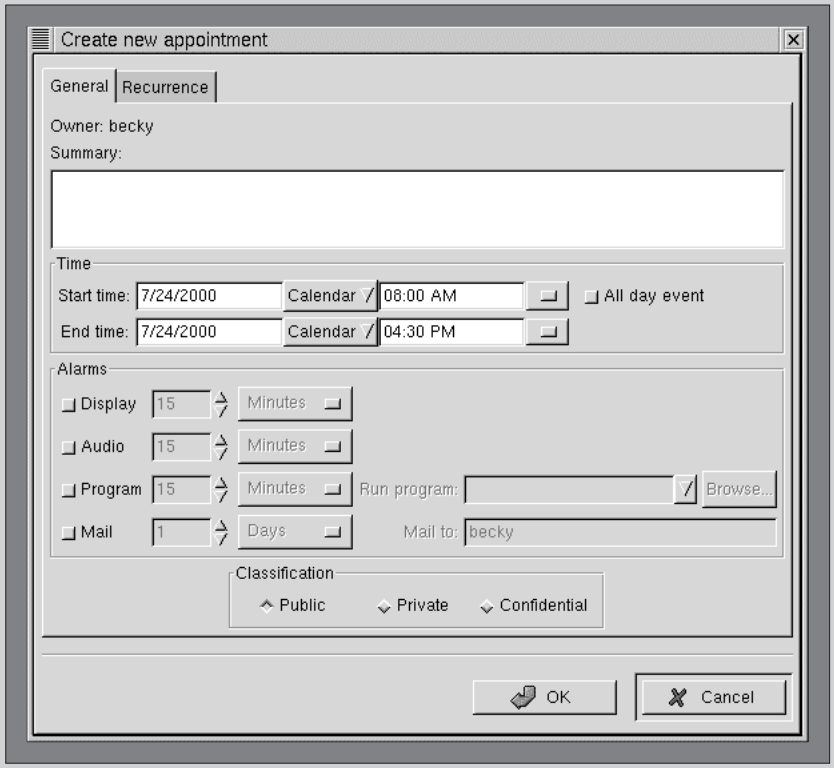

Figure 11-36: Create New Appointment window

18 Scroll the Day view down to see the afternoon appointments. A window appears similar to the one shown in Figure 11-37.

19 Click the **Week View** and then click the **Month View** tabs to see how the appointments appear in each of those views. (No appointments are visible in the Year view.)

20 You remember that Jean asked you to help her troubleshoot a printer problem. Add that to the to-do list by clicking the **Day View** tab and then clicking the **Add** button at the bottom of the window. The Create to-do item window appears.

21 In the Summary text box, type **Troubleshoot printer**.

22 In the Due Date box, type tomorrow's date.

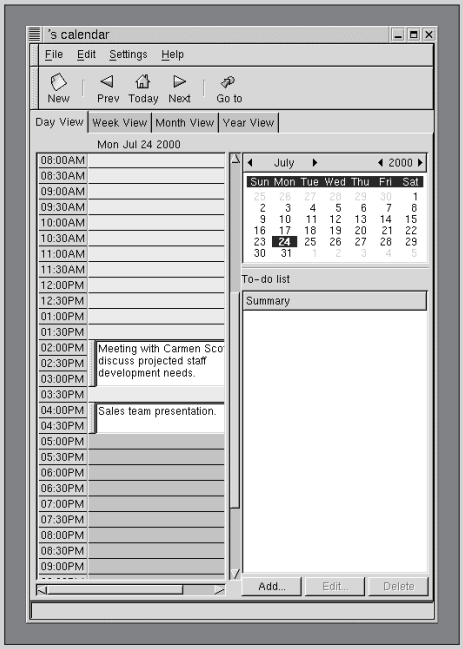

Figure 11-37: Day view with afternoon appointments

23 In the Item Comments box, type **Help Jean with her printer**. The Create to-do item window appears as shown in Figure 11-38.

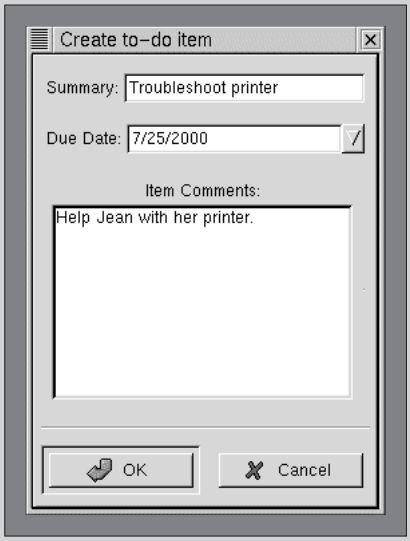

Figure 11-38: Create to-do item window

24 Click the **OK** button. The item is added to the to-do list.

25 Click the **Close** button to close the Calendar window.

When you started the Calendar application, you noticed an entry on the Applications menu named Gnumeric spreadsheet. You know the staff at Dominion consulting will need a spreadsheet program, so you decide to experiment briefly with it.

Using the Spreadsheet Application

The Gnumeric spreadsheet application offers many functions that anyone with spreadsheet experience will find familiar. It supports a large set of math functions and comes with extensive online documentation. You decide to test a simple sum function to see if the spreadsheet works like other well-known spreadsheets.

To become familiar with the Gnumeric spreadsheet:

1 Open the **Main menu** and then the **Applications menu**.

2 Click **Gnumeric spreadsheet**. You see a window similar to Figure 11-39.

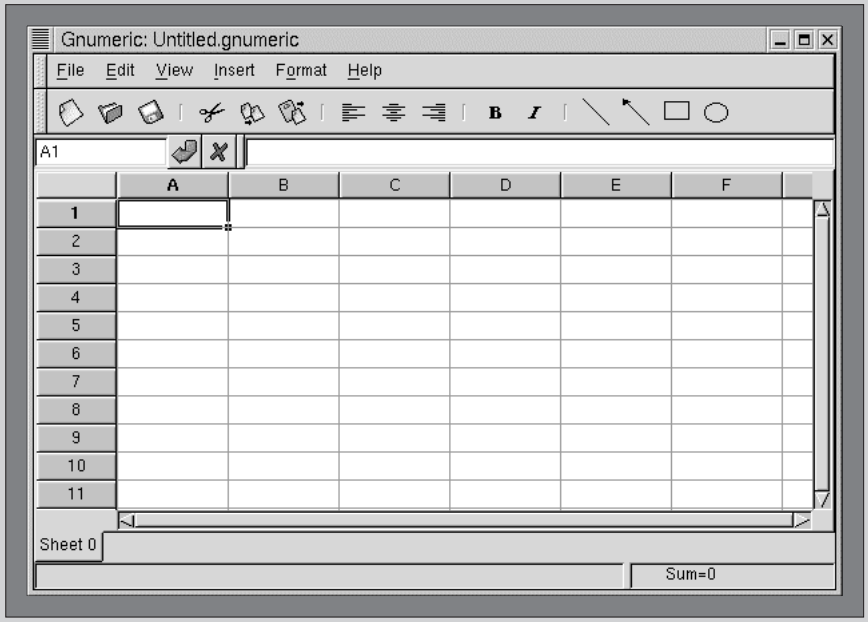

Figure 11-39: Gnumeric spreadsheet

3 Enter the following values in the indicated cells:

Cell A1: 147.90

Cell A2: 459.20

Cell A3: 712.35

Cell A4: 923.88

4 In cell A5, enter the function **=sum(a1:a4)** and press **Enter**.

The window now appears like Figure 11-40.

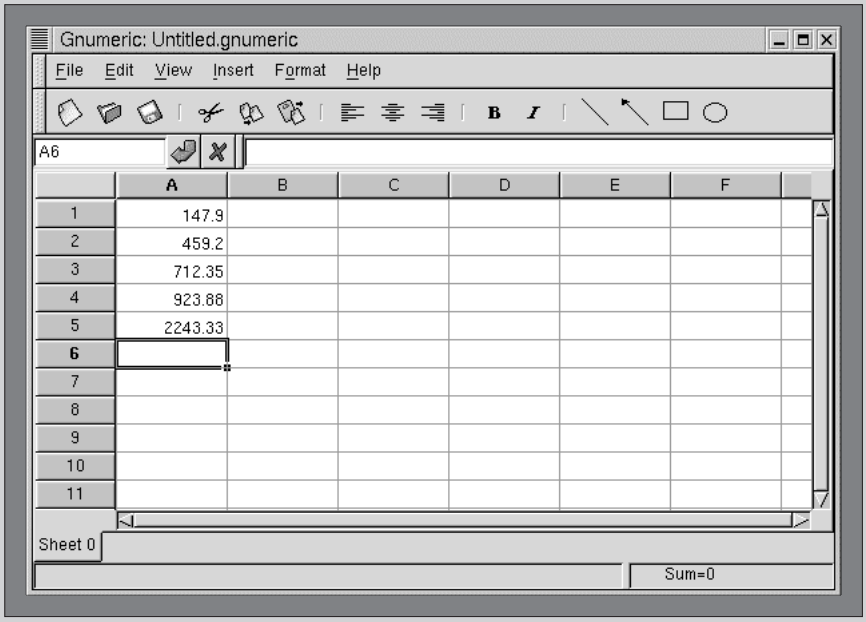

Figure 11-40: Updated spreadsheet window

5 Next, you decide to test the program's numeric formatting capabilities. Place the mouse pointer in cell A1.

6 Hold down the left mouse button, and drag the cursor to cell A5.

7 Release the mouse pointer. Cells A1 through A5 are now selected.

8 Click **Format** on the menu bar. A menu appears.

9 Click **Cells**. The window in Figure 11-41 appears.

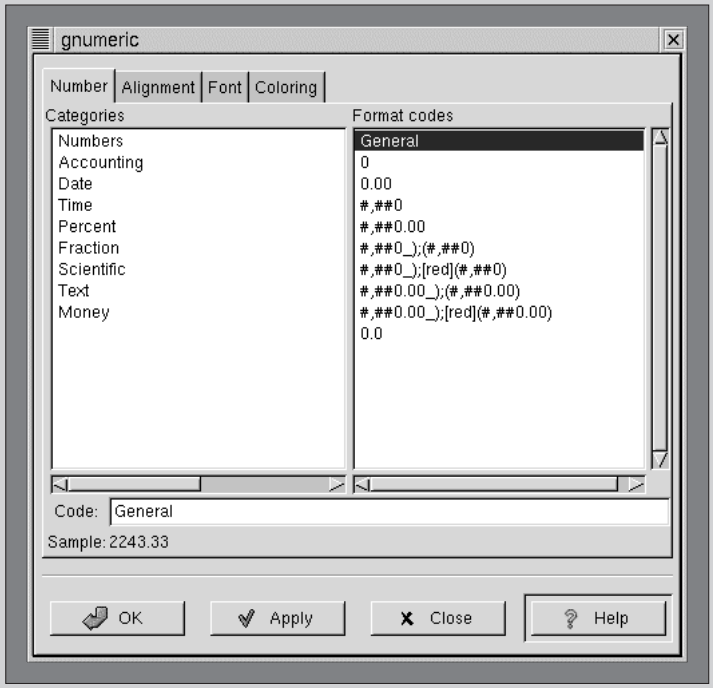

Figure 11-41: Cell Formatting window

10 In the Categories list, click **Money**.

11 In the Format Codes list, you see a list of number formats. Click **$#,##0.00_);[red]($#,##0.00)**.

12 Click the **OK** button. The spreadsheet now appears like Figure 11-42.

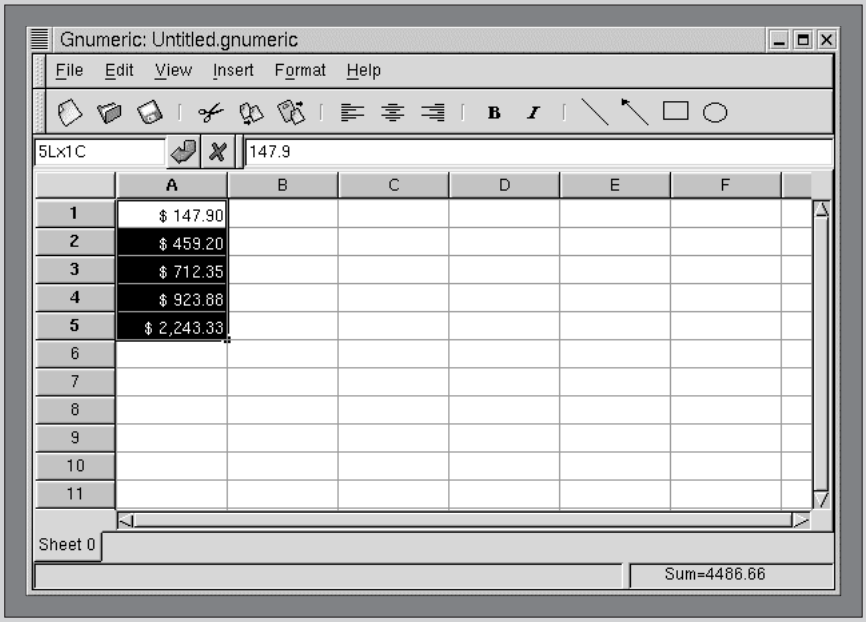

Figure 11-42: Updated spreadsheet

You have determined that the Gnumeric spreadsheet application will be useful to the staff at Dominion, and you plan to include it in your training. Before you close the application, you decide to test the X Window system's ability to cut and paste text and objects. You recall seeing an editor named gEdit, listed under the Applications menu. You decide to perform a simple cut and paste operation between the editor and the spreadsheet.

To demonstrate cut and paste:

1. Open the **Main menu** and then the **Applications menu**.
2. Click **gEdit**. You see a window similar to Figure 11-43.
3. In the editor, type **Daily Revenue Figures**.
4. Press the **Home** key to move the cursor to the beginning of the line of text you just entered.

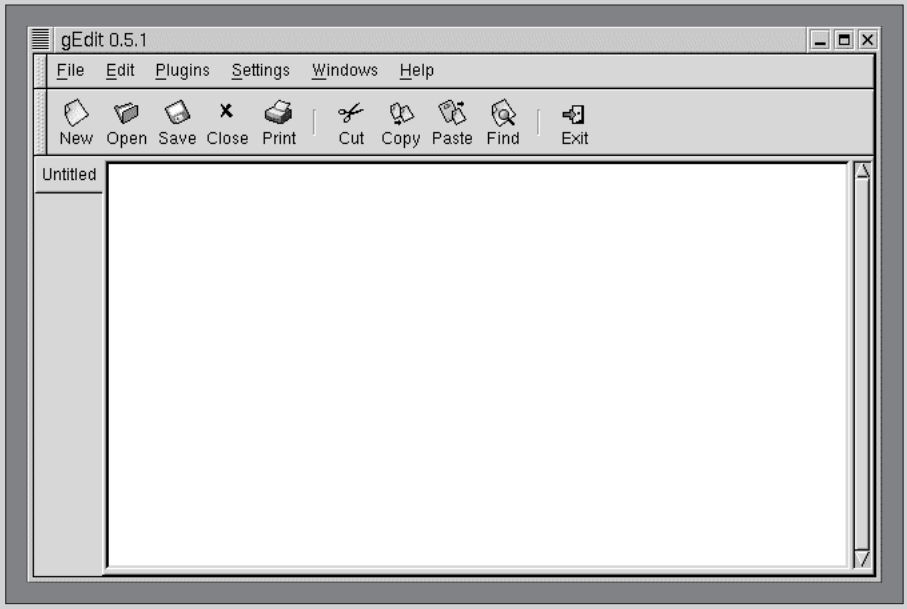

Figure 11-43: gEdit editor

5 Press **Shift+End** to highlight the entire line of text. The gEdit window should look similar to Figure 11-44.

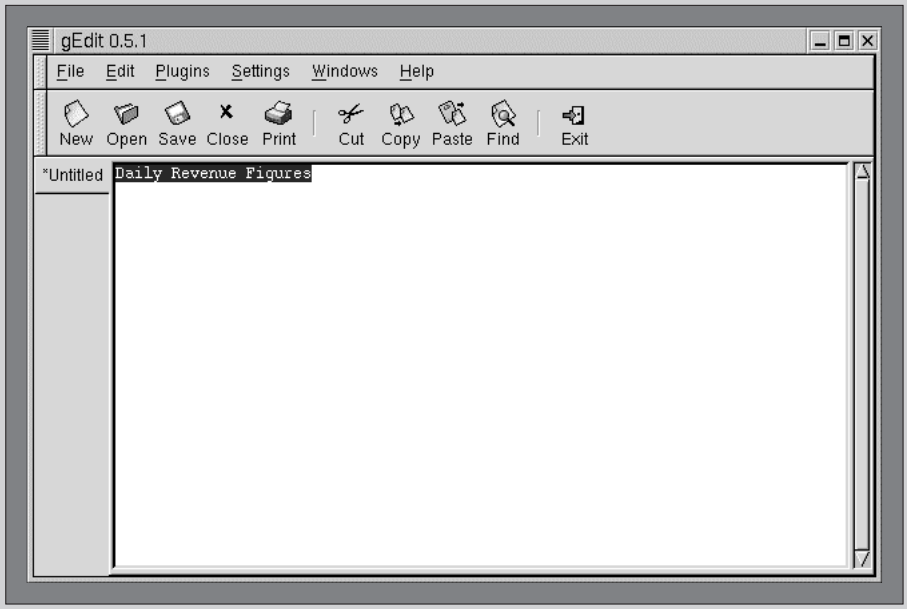

Figure 11-44: Highlighted text

6. Click the **Copy** button on the button bar. The text is now copied into the clipboard.
7. Activate the spreadsheet application by clicking any visible part of its window or clicking its icon in the Pager.
8. Click **cell B1**.
9. Click **Edit** on the menu bar, and then click **Paste**. Your spreadsheet looks like Figure 11-45.

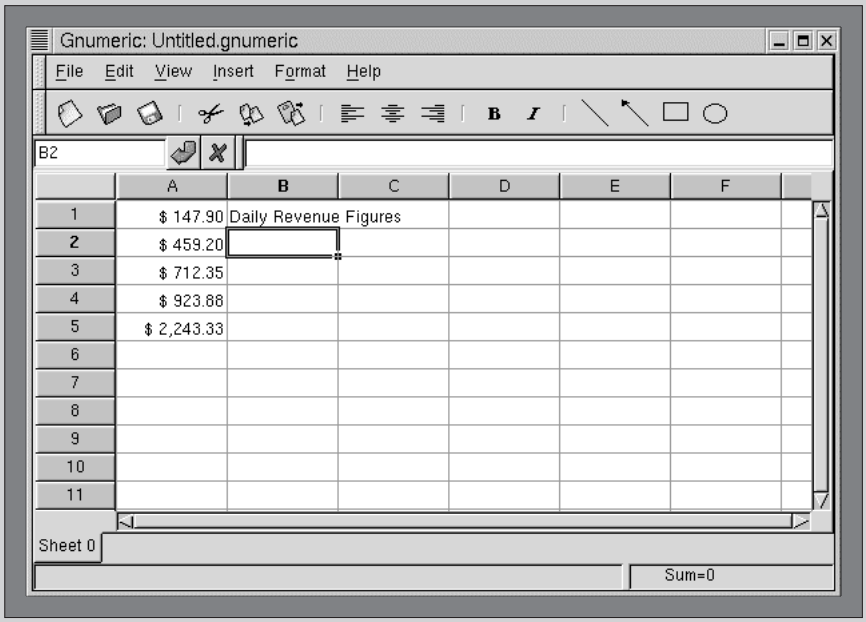

Figure 11-45: Spreadsheet with pasted text

10. Save the spreadsheet you have created as **Revenue** and then exit the application. Close the gEdit editor without saving the file.

One benefit the X Window system offers is the ability to work in multiple windows at the same time. For example, in the previous exercise you worked with the gEdit application in one window while using the spreadsheet application in another window. You can also work in multiple terminal windows at once. For example, you can edit a C program in one window, compile it in another window, and execute it in third window.

To use multiple terminal windows in a production environment:

1. Click the **Terminal Emulation** icon on the panel. A terminal window opens. Click in the **terminal window** to activate it.

2 Use the vi editor to open the **encode.c source** file you created in Chapter 10. Your screen appears similar to Figure 11-46.

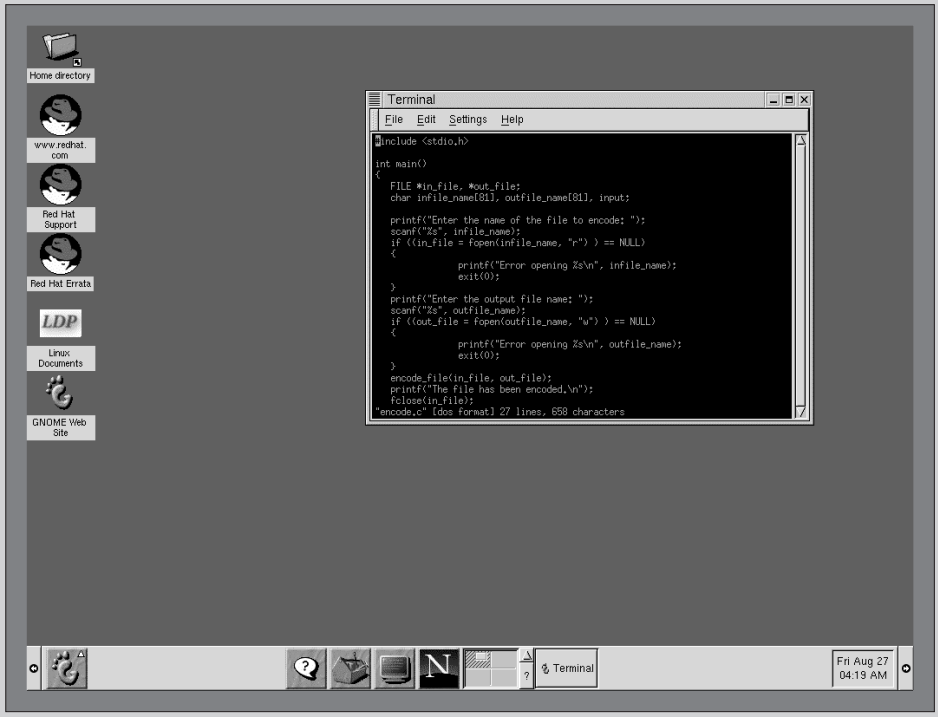

Figure 11-46: One terminal window

3 Click the **Terminal Emulation** icon on the panel again. A second terminal window opens. Click in the new terminal window to activate it. Type **./encode** and press **Enter** to execute the encode program. Your screen should look similar to Figure 11-47.

4 Viewing a program's source code while it is executing is a helpful debugging technique. Click the **first terminal window** again to activate it, and then move the window to a position on the screen so both terminal windows are visible. (You may need to move both windows to see them adequately.) By viewing both the program source code and the running program's output, you can see that the encode program is currently executing a scanf statement.

5 The encode program, which is running in the second terminal window, asks you to enter a filename. To determine which file you will encode, you will now open a third terminal window and view a directory listing. Click the **Terminal icon** on the panel to open the third terminal window. Click in the **new terminal window** to activate it.

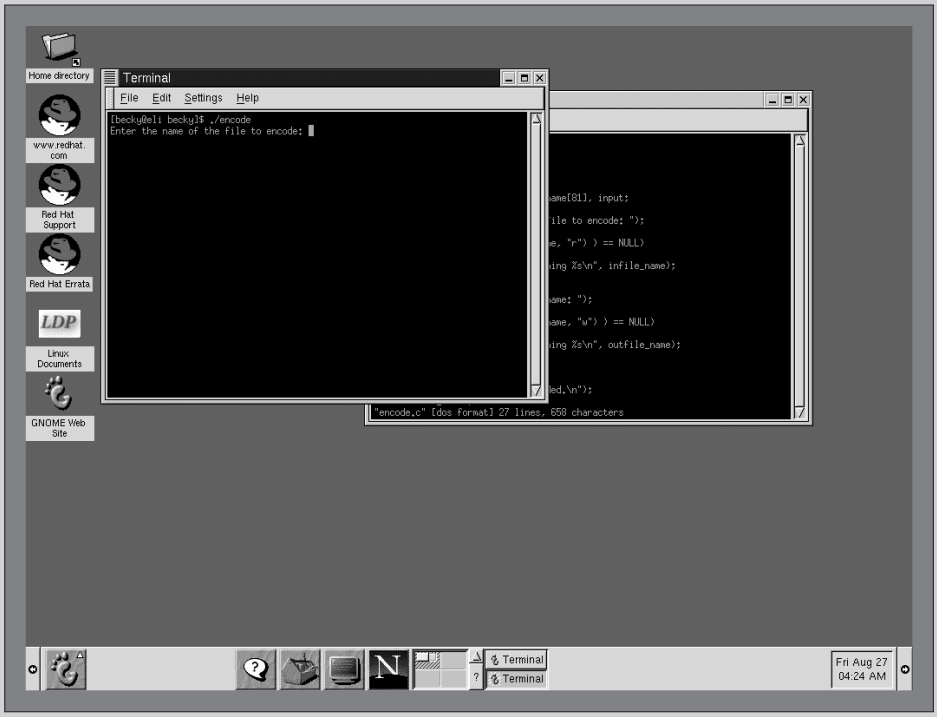

Figure 11-47: Two terminal windows

6. Type **ls** and press **Enter**. Your screen should look similar to Figure 11-48.
7. Look at the list of files in the window, and decide which one you will encrypt with the encode program. Click in the window in which the encode program is running, and type the filename.
8. The program next asks you to enter an output filename. Type **scrambled** and press **Enter**. The program ends and returns to a command line.
9. Close the three terminal windows.

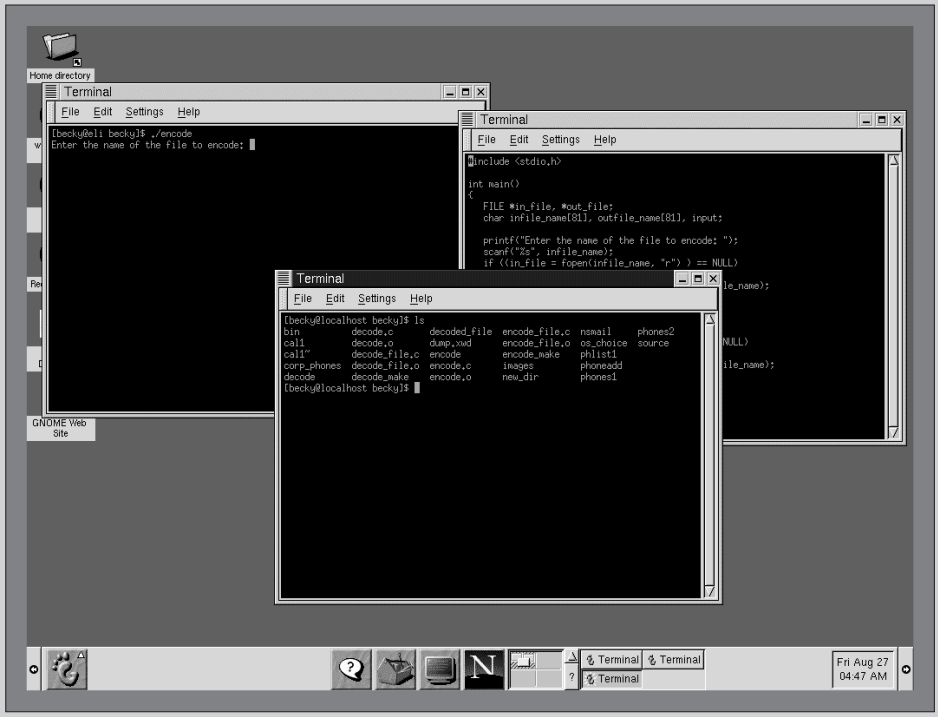

Figure 11-48: Three terminal windows

You have learned the primary operations of the File Manager and the Calendar, and confirmed that the X Window system has spreadsheet and editor applications. You have also learned to work in multiple windows at once. Now, you are ready to conduct your first training session with the staff at Dominion consulting.

Configuring the Desktop

You may customize many aspects of the X Window system. In this section you will learn to personalize your desktop environment by changing the background image and specifying a screen saver. Then you will learn to configure the items on the panel and add new applets to it. Finally, you will learn to add your own items to the Main menu.

Changing the Background and Screen Saver

The background is the desktop area behind all windows and icons. You can change the color of the desktop or specify a graphic image (known as **wallpaper**) to be used as a background. You change the background by clicking the Configuration Tool icon on the panel, shown in Figure 11-49.

Figure 11-49: Control Center icon

To change the background:

1 Click the **Configuration Tool** icon. You see the Control Center window, shown in Figure 11-50.

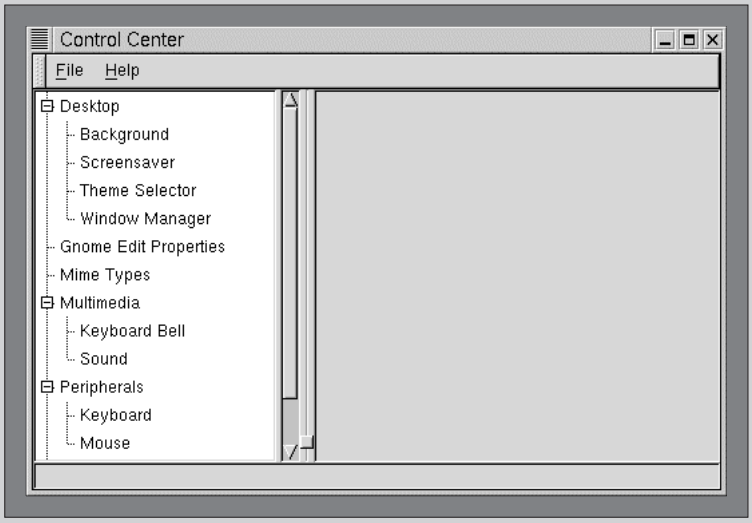

Figure 11-50: Control Center window

2 Click the word **Background**, which appears under Desktop in the left frame of the window. You see the Background Properties window shown in Figure 11-51.

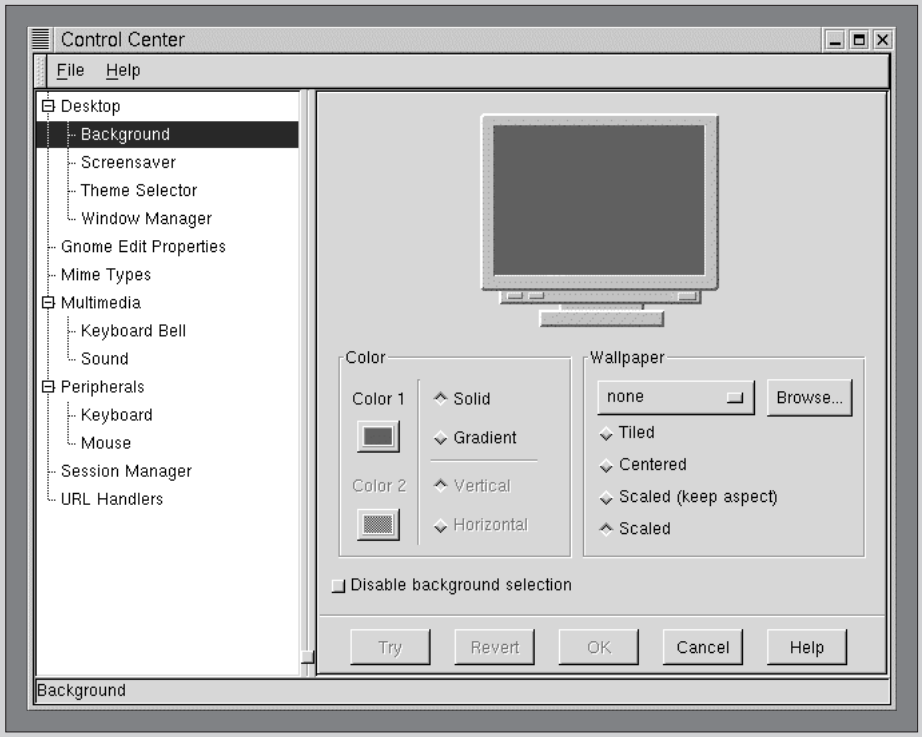

Figure 11-51: Background Properties window

3 You can choose a solid color, a gradient color, or an image to fill the background. First, set your background to a solid color. Make sure the **Solid** button is pressed, then click the **Color 1** button. You see the Pick a color window shown in Figure 11-52.

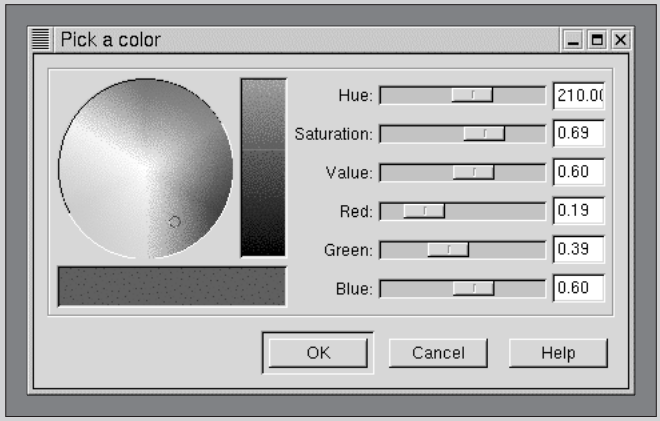

Figure 11-52: Pick a color window

4. Look at the color wheel, and find a color you would like for your background. Click the area containing that color.
5. Click **OK**. You return to the Background Properties window. Click the **Try** button to see how the color looks in your background.
6. Next, try a gradient color. A gradient color gradually fades, or blends, from one color to another. Click the **Gradient** button.
7. Click the **Color 2** button. You see the Pick a Color window again.
8. Click another color in the color wheel, and click **OK**.
9. On the Background Properties window, click the **Try** button. The gradient color selection appears on the screen.
10. Next, try a wallpaper image. Click the **Browse** button under the Wallpaper section. You see the Wallpaper Selection window, which is similar to Figure 11-53.

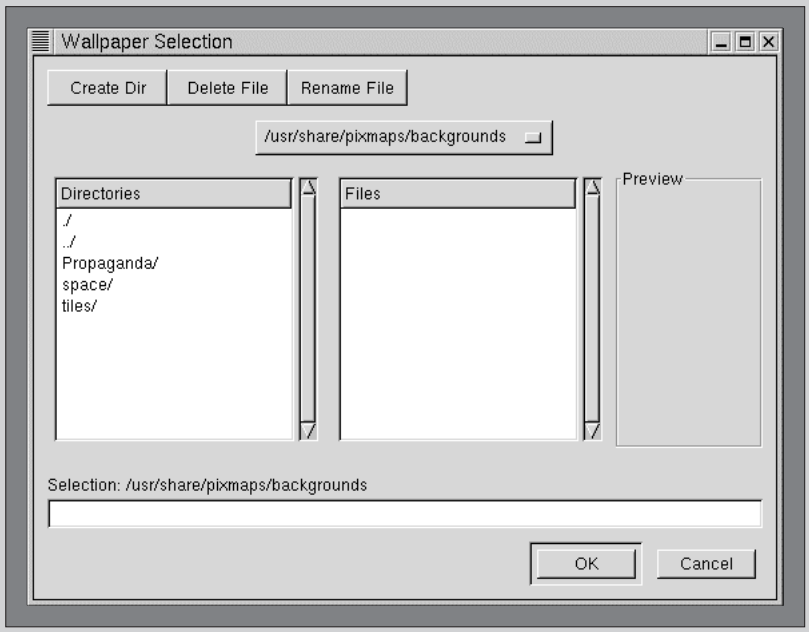

Figure 11-53: Wallpaper Selection window

Note:The directories you see listed may differ from the ones shown in the figure. The selections available to you depends on how Linux is installed on your system.

11. Double-click one of the directories listed in the Wallpaper Selection window. You see a list of filenames in the Files pane.
12. Click one of the listed filenames. A preview of the image appears in the preview pane. Each time you click a filename, you see a preview of the file.
13. Select an image you like, and click **OK**.

14 On the Background Properties window, click the **Try** button to apply the wallpaper image to the background.

15 Repeat the steps above until you find a color, gradient color, or wallpaper image you like. In the Background Properties window, click **OK**.

Changing the Screen Saver You can use the X Window screen saver to deter unauthorized use of a terminal or workstation by requiring a password. When the screen saver is active, it will not deactivate until the user enters his or her login password. You use the Control Center window to activate and configure the screen saver.

To select and configure a screen saver:

1 Click the **Configuration Tools** icon. On the Control Center window, click the word **Screensaver**. You see the Screensaver Properties window shown in Figure 11-54.

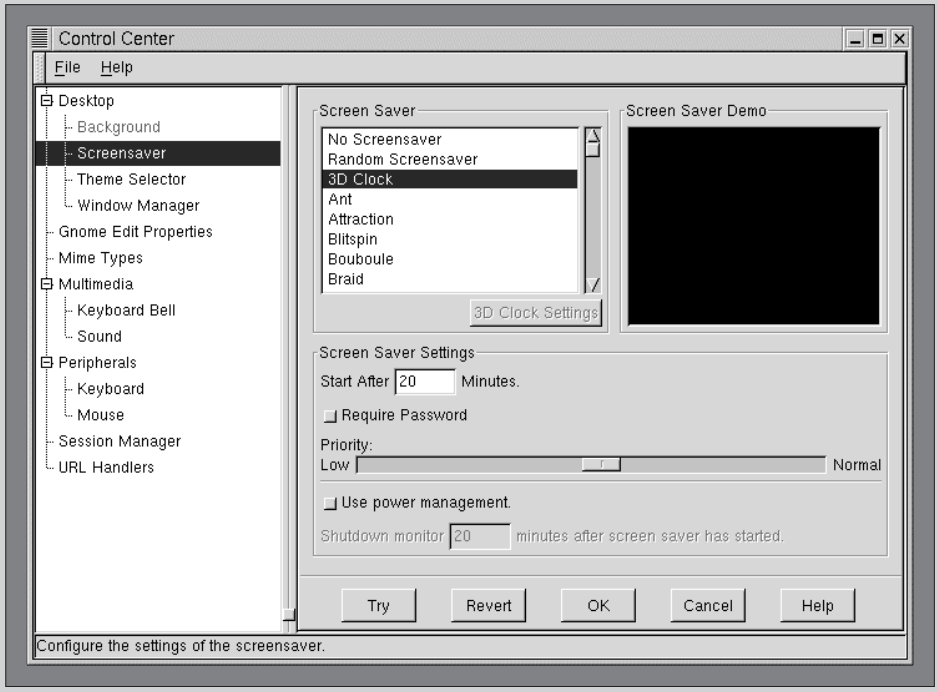

Figure 11-54: Screensaver Properties window

2. From the Screen Saver list, click a screen saver, such as 3D Clock. You see a preview of the screen saver in the Screen Saver Demo area.
3. In the Screen Saver Settings area, you can set the number of minutes that must elapse before the screen saver activates. Click in the **Start After** text box, and type **1**.
4. Click the **Require Password** button.
5. Click **OK** on the Screensaver Properties window.
6. Do not type or move the mouse for one minute. When the screen saver activates, deactivate it by pressing a key or moving the mouse. A window appears requesting your password. Type your password and press **Enter**.
7. Open the Screensaver Properties window, and adjust the screen saver time to **10** minutes.
8. Exit the Screensaver Properties window, and close the Control Center window.

Configuring the Panel

You may configure almost every aspect of the GNOME panel. In this section you will learn to adjust the position of icons on the panel, add new applets to the panel, and add your own icon that launches a program.

To adjust the position of icons on the panel:

1. Right-click an applet icon on the panel.
2. On the shortcut menu, click **Move applet**. The mouse pointer becomes a four-way arrow.
3. Drag the mouse pointer to the left or right. As you do, the icon moves along the panel.
4. When you decide where you would like to move the icon, click the mouse. The icon stays in its current place.

You can use several other applets in addition to those that appear on the panel by default. Management at Dominion Consulting has asked you to instruct the other staff how to add these applets to their panels:

- The CPULoad applet displays an animated bar graph that indicates the usage of your machine's CPU.
- The Disk Usage applet displays a pie chart indicating the system's used and free disk space.

To add the CPULoad and Disk Usage applets to the panel:

1. Position the mouse pointer over any part of the panel not occupied by an icon, and right-click.
2. On the shortcut menu, point to the **Add applet** item. A submenu appears.
3. Point to the **Monitors** item on the submenu. Another submenu appears.
4. Click **CPULoad**. A small square appears on the panel. This is where the CPULoad animated bar graph will appear as you use your system.
5. Right-click an unoccupied area of the panel again.
6. On the shortcut menu, point to **Add applet**.
7. On the submenu, point to **Monitors**.
8. Click **Disk Usage**.

   A rectangular area appears on the panel. This is where the disk usage pie chart appears, showing the system's used and free space.
9. To determine which color indicates used space and which indicates free space, right-click the area containing the pie chart.
10. On the shortcut menu, click **Properties**.

    The Diskusage Settings window appears, as shown in Figure 11-55.

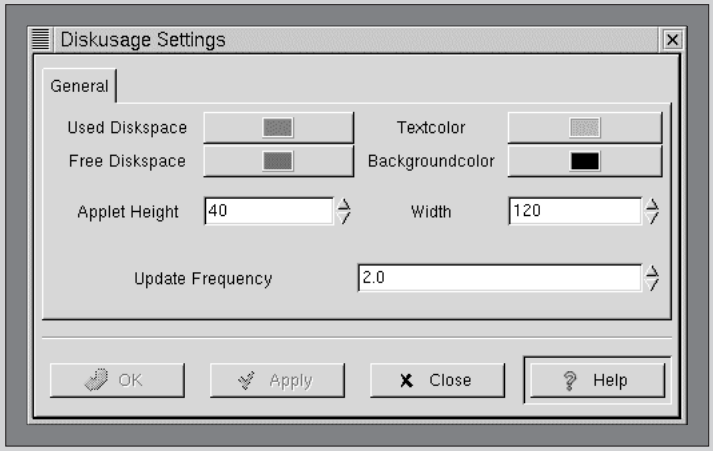

Figure 11-55: Diskusage Settings window

11. This window shows which colors indicate used and free disk space. Change the color settings by clicking the color buttons and selecting a new color from the color wheel. When you're finished, click the **Close** button.

In addition to the available applets, you may also add your own programs as applets to the panel. Management at Dominion Consulting has asked you to add the phoneadd script to the panel. (You developed the phoneadd script in Chapters 6 and 7.)

To add the phoneadd script to the panel as an applet:

1. Position the mouse pointer over an unoccupied area of the panel, and right-click. The shortcut menu appears.
2. You need to add a launcher applet to the panel. A launcher executes another program when you click its icon. Click **Add new launcher** on the shortcut menu. You see the Create launcher applet window, as shown in Figure 11-56.

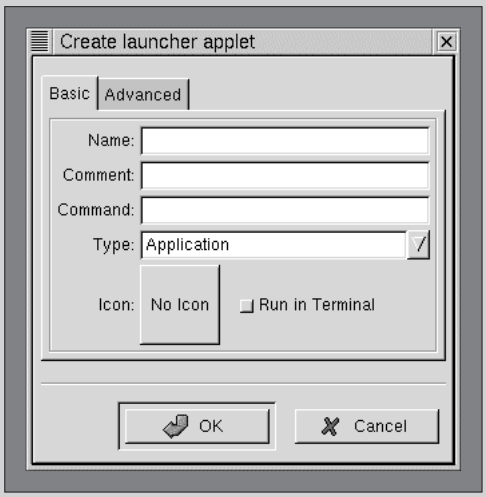

Figure 11-56: Create Launcher Applet window

3. In the Name text box, type **phoneadd Script**.
4. In the Comment text box, type **Adds a phone number to the corp_phones file**.
5. In the Command text box, type **./phoneadd**.
6. Leave the Type text box set to **Application**.
7. Click the **Run in Terminal** button.
8. Click the **Icon** button. The Choose an icon window appears, similar to Figure 11-57.

Figure 11-57: Choose an icon window

9 Scroll through the set of icons. When you see one you would like to use for the phoneadd script, click it. Then click **OK**.

10 On the Create launcher applet window, click **OK**. The icon you selected appears on the panel.

11 Position the mouse pointer over the phoneadd icon, but do not click it yet. After a moment, a Help box appears with the text you entered in the launcher applet Comment box.

12 Click the icon. The script file executes in a terminal window. The window looks similar to Figure 11-58.

13 Test the application by entering your own name and false information for department number, job title, and date hired.

14 Finally, type **q** to quit the program. The terminal window closes.

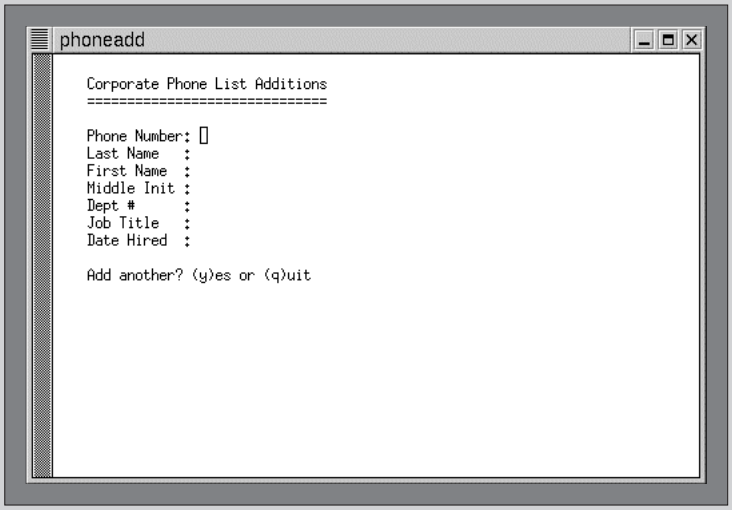

Figure 11-58: Phoneadd script window

In this section you learned to customize the panel by moving icons and adding applets and icons for your own programs. This makes your work easier, because the panel displays frequently needed information (such as the amount of free disk space) and automates the execution of programs you run often. Next you will learn to further customize the desktop environment by adding your own programs to the Main menu.

Adding Programs to the Main Menu

Management at Dominion Consulting is pleased that you have learned to add applications to the panel. Now they ask you to instruct the staff to add applications to the Main menu as well. You decide to show them how to add the phoneadd script, so it will be accessible from both the panel and the Main menu.

To add the phoneadd script to the Main menu:

1. Click the **Main menu** button. The Main menu appears. Notice that in the middle of the menu, a section appears labeled User menus. This is where you want to add an entry for the phoneadd application.
2. Position the mouse pointer over the **Settings** entry. A submenu appears.
3. On the submenu, click **Menu editor**. The GNOME menu editor window appears, as shown in Figure 11-59.

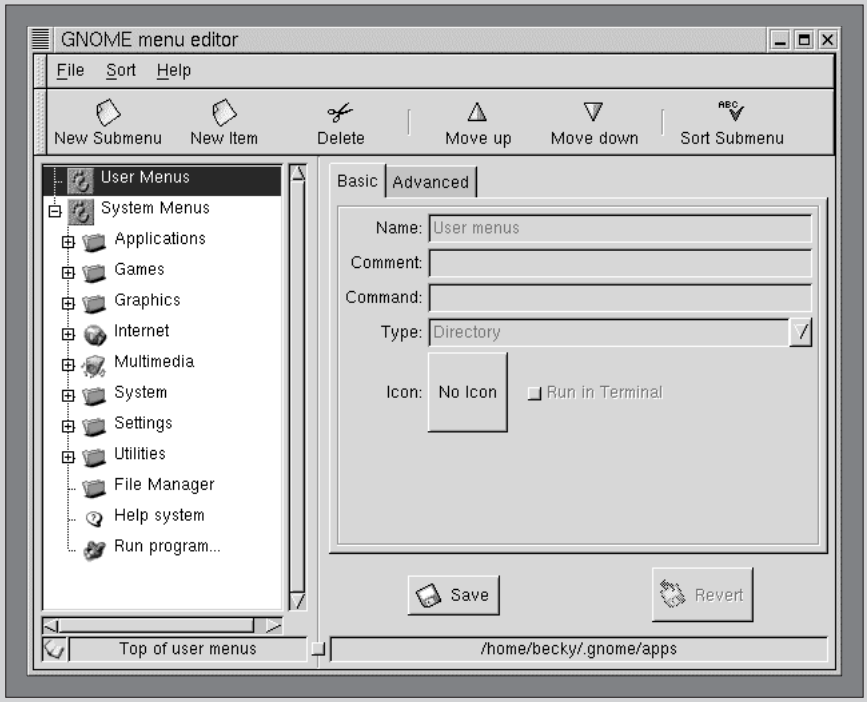

Figure 11-59: GNOME Menu Editor window

4. Be sure that User Menus is selected in the left area of the window, and then click the **New Item** button near the top of the window.
5. In the Name text box, type **Add a Phone Number**.
6. In the Comment text box, type **Adds a phone number to the corp_phones file**.
7. In the Command text box, type **./phoneadd**.
8. Leave the Type text box set to **Application**.
9. Click the **Run in Terminal** button.
10. Click the **Icon** button. The Choose an icon window appears (shown in Figure 11-57).
11. Select the same icon you selected when adding the phoneadd script to the panel. Click **OK** to return to the Menu Editor window.
12. Click the **Save** button.
13. Close the Menu Editor window.
14. Click the **Main menu** button. The Main menu appears.
15. Under the User menus entry, click **Add a Phone Number**.
16. The phoneadd script executes in a terminal window. Close the terminal window.

The staff and management at Dominion Consulting are delighted to know how to customize their X Window system environment and add programs to the panel and Main menu. Executing frequently used applications from menu entries or icons is usually faster than using long commands. It also eliminates typing errors, such as misspelling a command or program name. These benefits will certainly increase productivity and make the staff's daily work easier.

SUMMARY

- The File Manager is a graphical application for managing your directories and files and for navigating the file system.
- In addition to the File Manager, the X Window system has several other built-in applications. Examples are a calendar program, a spreadsheet, and an editor.
- You can copy text from one window and paste it into another.
- You can customize the background of your display with a color or with a graphic image known as wallpaper.
- You may choose from a number of screen savers, which activate when there has been no keyboard or mouse activity after a specified period of time. The screen saver may be password protected, requiring the user to enter his or her password to deactivate it.
- You can customize the panel by adding and moving applet icons. You can even add icons that launch your own programs.
- You can customize the Main menu by adding entries that execute your own programs.

COMMAND SUMMARY

Chapter 11 commands

Command	Purpose	Options covered in this chapter
shutdown	Shuts the system down	-r specifies that the system should shut down, then restart
startx	Starts the X Window System	

REVIEW QUESTIONS

1. The + sign next to directories in the File Manager's directory tree view indicates _____.
   a. more than one directory has this name
   b. the directory is empty
   c. the directory is full and no more files may be stored in it
   d. the directory contains subdirectories
2. The term "wallpaper" refers to _____.
   a. an image placed on the desktop
   b. a computer game
   c. the gradient color of the background
   d. the amount of video memory in the system
3. You can move an applet icon on the panel by _____.
   a. clicking the icon and using the arrow keys
   b. clicking the icon, pressing Ctrl+M, and then using the arrow keys
   c. right-clicking the icon and selecting Move applet from the menu
   d. selecting Move Icon from the File Manager's Edit menu
4. Use the Launcher applet to _____.
   a. start the X Window system
   b. start your own program from the panel
   c. play a space computer game
   d. display the Main menu
5. When you select a file and then hold down the _____ key while selecting another file, all the files whose names appear between the two selected files are also selected.
   a. Shift
   b. Ctrl
   c. Alt
   d. M
6. The _____ application lets you create a to-do list.
   a. gEdit
   b. Calendar
   c. Gnumeric Spreadsheet
   d. File Manager
7. True or false: The Gnumeric Spreadsheet Application performs mathematical functions, such as adding a column of numbers.
8. A gradient background color is _____.
   a. made of shades of gray
   b. one solid color
   c. a color that gradually fades, or blends, into another color
   d. transparent

9. True or false: Your screen saver password is different from your login password.
10. To add your own program to the panel as an applet, right-click an unoccupied area of the panel and select _____ from the shortcut menu.
    a. Add new launcher
    b. Add new program
    c. Add new applet
    d. Add new program

EXERCISES

1. Launch the File Manager and create these directories under your home directory:
   new_files
   old_files
2. Open a Terminal window and create these empty files in your home directory:
   file1
   file2
   file3
3. Use the File Manager to copy the files you created in Exercise 2 into the old_files directory.
4. Use the File Manager to move the files that are in the old_files directory into the new_files directory.
5. Use the File Manager to delete file1, file2, and file3 in your home directory.
6. Change the File Manager's custom view so it shows this file information:
   Name
   Permission
   Creation Time
   Access Time
7. Reconfigure the background so it has a gradient color.
8. Make sure the Diskusage applet is added to the panel. Reconfigure the colors it uses to represent free and used disk space.
9. Open the Calendar application and add these appointments:
   Meeting with insurance agent, today at 4:30 PM
   Meeting with VP of Sales tomorrow at 10:00 AM
   Meeting with Jim today at 11:00 AM
   Meeting with Sally tomorrow at 2:00 PM
10. After you enter the appointments listed in Exercise 9, look at them in the Day, Week, and Month views.

DISCOVERY EXERCISES

1. Use vi or Emacs to create the script file list. The file should contain the command: ls –l
2. Create an icon on the panel that launches the list script file you created in Discovery Exercise 1.
3. Run the list script file from the icon you created on the panel in Discovery Exercise 2. Does the directory listing scroll by too fast to see? Modify the script file so the user must press Enter after the list is displayed. This will pause the output, so you have time to see it.
4. Add an entry to the Main menu for the list script file.
5. In this chapter you added the CPULoad and Diskusage applets to the panel. You can also choose other applets. Experiment by adding several of them to the panel.
6. Open the Gnumeric Spreadsheet, create a spreadsheet named ss_practice, and enter the values:
   575.9 in cell A1
   901.2 in cell A2
   1047.09 in cell A3
   89.7 in cell A4
   1124.5 in cell A5
   In cell B1 enter the function that sums cells A1 through A5.

If you cannot remember how to use the function for summing cells, refer to the spreadsheet exercise earlier in this chapter, or use the spreadsheet's online help system.

7. After you enter the spreadsheet values listed in Discovery Exercise 6, experiment with the Accounting, Fraction, Money, and Scientific formats.
8. Scroll through all available screen savers in the Control Center's Screensaver Properties window, looking at a preview of each one. Select a new screensaver and test it.